Access DB# 60055

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: My-Chau Tran Examiner #: 78933 Date: 2/11/02
Art Unit: 1641 Phone Number 305-6999 Serial Number: 09/652,284
Mail Box and Bldg/Room Location: CM1, 8A16 Results Format Preferred (circle): (PAPER) DISK E-MAIL
7E12

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: X-Y Addressable Array for High Density Electrical & Electrochemical detection of Biomolecules

Inventors (please provide full names): Vi-En Choong, George Maracas, Larry Akio Nagahara, and Song Shi

Earliest Priority Filing Date: 8/31/2000

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please performed: ① Inventors search
② Attached independent claims

Thank-you

Point of Contact:
Beverly Sheets
Technical Info. Specialist
CM1 1E04 Tel: 308-4994
1E05

****

STAFF USE ONLY

Searcher: Bunker 1, c 4994
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up:
Date Completed: 02-12-02
Searcher Prep & Review Time: 34
Clerical Prep Time:
Online Time: 12

Type of Search

NA Sequence (#)
AA Sequence (#)
Structure (#)
Bibliographic
Litigation
Fulltext
Patent Family
Other

Vendors and cost where applicable

STN
Dialog
Questel/Orbit
Dr.Link
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify)

TO-1590 (8-01)

Tran, M.
09/652284

[redacted] ENTERED AT 12:25:21 ON 12 FEB 2002)

- Key terms

L1 87424 SEA FILE=CAPLUS ABB=ON PLU=ON (BIOMOLECULE OR MOLECULE) (5A)(DETERM? OR DETECT? OR DET## OR SCREEN?)
L2 3891 SEA FILE=CAPLUS ABB=ON PLU=ON L1 AND (ELECTROCHEMICAL? OR ELECTRO CHEMICAL? OR ELECTRIC?)
L11 406 SEA FILE=CAPLUS ABB=ON PLU=ON L2 AND (APPARAT? OR DEVICE OR EQUIPMENT)
L12 99 SEA FILE=CAPLUS ABB=ON PLU=ON L11 AND ELECTRODE
L13 29 SEA FILE=CAPLUS ABB=ON PLU=ON L12 AND IMMOBIL?

L13 ANSWER 1 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2002:10855 CAPLUS
DOCUMENT NUMBER: 136:78939
TITLE: Microelectronic **device** and method for label-free detection and quantification of biological and chemical molecules
INVENTOR(S): Tender, Leonard M.; Peckerar, Martin; Perkins, F. Keith; Fertig, Stephanie J.; Snow, Eric S.
PATENT ASSIGNEE(S): The United States of America, as Represented by the Secretary of the Navy, USA
SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002001647	A1	20020103	WO 2001-US20052	20010622

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-213471 P 20000623

AB Mol. recognition-based electronic sensor, which is gateless, depletion mode field effect transistor consisting of source and drain diffusions, a depletion-mode implant, and insulating layer chem. modified by **immobilized** mol. receptors that enables miniaturized label-free **mol. detection** amenable to high-d. array formats. The cond. of the active channel modulates current flow through the active channel when a voltage is applied between the source and drain diffusions. The cond. of the active channel is detd. by the potential of the sample soln. in which the **device** is immersed and the **device**-soln. interfacial capacitance. The cond. of the active channel modulates current flow through the active channel when a voltage is applied between the source and drain diffusions. The interfacial capacitance is detd. by the extent of occupancy of the **immobilized** receptor mols. by target mols. Target mols. can be either charged or uncharged. Change in interfacial capacitance

upon target mol. binding results in modulation of an externally supplied current through the channel.
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 2 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:833870 CAPLUS
DOCUMENT NUMBER: 135:354968
TITLE: **Apparatus** for measurement and control of the content of glucose, lactate or other metabolites in biological fluids
INVENTOR(S): Varalli, Maurizio Claudio; Poscia, Alessandro
PATENT ASSIGNEE(S): Varalli, Maurizio, Italy
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001041830	A1	20011115	US 2001-851447	20010507

PRIORITY APPLN. INFO.: IT 2000-FI107 A 20000508
AB Measurement and communication transducers and electronic circuits and control programs of the internal microprocessor of glucose content measurement instruments for personal independent use aimed at improving the safety and flexibility of use and the measurement performances of instruments for the almost continual **detn.** of glucose or other **mols.** in extracellular fluids.

L13 ANSWER 3 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:787900 CAPLUS
TITLE: **Electrochemical** application of DNA biosensors
AUTHOR(S): Mascini, M.; Lucarelli, F.; Palchetti, I.; Marrazza, G.
CORPORATE SOURCE: Dipartimento di Chimica, Universita degli Studi di Firenze, Florence, 50121, Italy
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (2001), 4414(International Conference on Sensor Technology (ISTC 2001), 2001), 8-19
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Disposable **electrochem.** DNA-based biosensors are reviewed; they have been used for the **detn.** of low- **mol.** wt. compds. with affinity for nucleic acids and for the detection of hybridization reaction. The first application is related to the mol. interaction between surface-linked DNA and pollutants or drugs, in order to develop a simple **device** for rapid screening of toxic compds. The detn. of such compds. was measured by their effect simple **device** for rapid screening of toxic compds. The detn. of such compds. was measured by their effect on the oxidn. signal of the guanine peak of calf thymus DNA **immobilized**

on the **electrode** surface and investigated by chronopotentiometric or voltammetric anal. Applicability to river and wastewater sample is demonstrated. Moreover, disposable **electrochem.** sensors for the detection of a specific sequence of DNA were realized by **immobilizing** synthetic single-stranded oligonucleotides onto a graphite screen-printed **electrode.** The probes because hybridized with different concns. of complementary sequences present in the sample. The hybrids formed on the **electrode** surface were evaluated by chronopotentiometric anal. using daunomycin as the indicator of the hybridization reaction. The hybridization was also performed using real samples. Application to apolipoprotein E is described, in this case samples have to be amplified by PCR and then analyzed by the DNA biosensor. The extension of such procedures to samples of environmental interest or to contamination of food is discussed.

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 4 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:781157 CAPLUS
DOCUMENT NUMBER: 135:328906
TITLE: Microfabricated biosensor chips having integrated components and related method
INVENTOR(S): Bashir, Rashid; Bhunia, Arun K.; Gomez, Rafael; Ladisch, Michael R.; Robinson, J. Paul; Sarikaya, Ayda
PATENT ASSIGNEE(S): Purdue Research Foundation, USA
SOURCE: PCT Int. Appl., 81 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001079529	A1	20011025	WO 2001-US9745	20010326
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 2001053535	A1	20011220	US 2001-817541	20010326

PRIORITY APPLN. INFO.: US 2000-197560 P 20000417

AB A microscale biosensor for use in the **detection** of target biol. substances including **mols.** and cells is a microfluidic system with integrated electronics, inlet-outlet ports and interface schemes, high sensitivity detection of pathogen specificity, and processing of biol. materials at semiconductor interfaces. A fabrication process includes an all top-side processing for the formation of fluidic channels, planar fluidic

interface ports, integrated metal **electrodes** for impedance measurements, and a glass cover sealing the non-planar topog. of the chip using spin-on-glass as an intermediate bonding layer. Detection sensitivity is enhanced by small fluid vols., use of a low-cond. buffer, and **elec.** magnitude or phase measurements over a range of frequencies. A microfabricated biochip having **electrode**-contg. cavities was prepd. and used to detect viable Listeria innocua. The limit in sensitivity was between 1-50 cells in a 5.3 nL vol.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 5 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:618212 CAPLUS
DOCUMENT NUMBER: 135:177678
TITLE: Protein and peptide sensors using **electrical** detection methods
INVENTOR(S): Sawyer, Jaymie Robin; Li, Changming; Choong, Vi-En; Maracas, George; Zhang, Peiming
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 53 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001061053	A2	20010823	WO 2001-US5476	20010220

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-506178 A2 20000217

AB The present invention provides an **app.** and methods for the **elec. detection** of **mol.** interactions between a probe mol. and a protein or peptide target mol., but without requiring the use of **electrochem.** or other reporters to obtain measurable signals. The methods can be used for **elec. detection** of **mol.** interactions between probe **mols.** bound to defined regions of an array and protein or peptide target mols. which are permitted to interact with the probe mols. Streptavidin-modified porous polyacrylamide hydrogel microelectrodes were prepd. Biotinylated polyclonal antibodies to Escherichia coli were **immobilized** on the microelectrodes and the sensor was used to detect E. coli.

L13 ANSWER 6 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:453284 CAPLUS

DOCUMENT NUMBER: 135:30970
TITLE: Method and **device** for **detecting** and quantifying **biomolecules** using microelectrodes
INVENTOR(S): Schuelein, Juergen; Hassmann, Joerg
PATENT ASSIGNEE(S): November Aktiengesellschaft Gesellschaft fuer Molekulare Medizin, Germany
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001044501	A2	20010621	WO 2000-DE4438	20001213
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 19960076	A1	20010705	DE 1999-19960076	19991213

PRIORITY APPLN. INFO.: DE 1999-19960076 A 19991213

AB The invention relates to a method for **detecting** and quantifying a first **biomol.** in a soln., comprising the following steps: (a) binding of the first biomol. to a second biomol. which at least along segments thereof exhibits a specific affinity to a first **biomol.** and (b) **detn.** of the **elec.** cond. of a complex formed from the first and the second biomol., whereby the second biomol. forms a bridge between a first and a second **electrode.** The method and **device** is concerning biochip technol. for the detection of nucleic acid hybridization, DNA-PNA and protein-protein complex formation.

L13 ANSWER 7 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:452915 CAPLUS
DOCUMENT NUMBER: 135:43086
TITLE: Column-and-row-addressable high-density biochip array
INVENTOR(S): Shi, Song; Zhang, Peiming; Maracas, George
PATENT ASSIGNEE(S): Motorola Inc., USA
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 2001043870 A2 20010621 WO 2000-US34222 20001214
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: US 1999-464500 A1 19991215
AB The present invention provides a method and **app.** comprising a platform for a column-and-row-addressable high-d. biochip array. The **app.** can be used as a high-d. biochip array for electronic or **electrochem. detection** of **mol.** interactions between probe **mols.** bound to defined regions of the array and target mols. exposed to the array.

L13 ANSWER 8 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:435309 CAPLUS
DOCUMENT NUMBER: 135:43123
TITLE: Methods and compositions relating to **electrical** detection of nucleic acid hybridization or peptide binding preferably using AC impedance
INVENTOR(S): Choong, Vi-en; Gallagher, Sean; Gaskin, Mike; Li, Changming; Maracas, George; Shi, Song
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 63 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001042508	A2	20010614	WO 2000-US33497	20001211

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: US 1999-458501 A 19991209
US 1999-458533 A 19991209
US 1999-459685 A 19991213
AB This invention relates to the **elec. detection** of **mol.** interactions between biol. **mols.** The method generally rely on the mol. interactions such as nucleic acid

hybridization or protein-protein (for example, antigen-antibody) binding reactions done on solid supports using arrays of peptides or oligonucleotides for capture binding ligands. As a result of these interactions, some electronic property of the system changes, and detection is achieved. In a preferred embodiment, the methods of the invention utilize AC impedance for the detection. In some embodiments, no **electrochem**. or other label moieties are used. In others, **electrochem**. active (ECA) labels are used to detect reactions on hydrogel arrays, including genotyping reactions such as the single base extension reaction.

L13 ANSWER 9 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:303597 CAPLUS
DOCUMENT NUMBER: 134:357258
TITLE: Affinity **electrochemical** biosensors for pollution control
AUTHOR(S): Mascini, M.
CORPORATE SOURCE: Dipartimento di Chimica, Florence, 50121, Italy
SOURCE: Pure and Applied Chemistry (2001), 73(1), 23-30
CODEN: PACHAS; ISSN: 0033-4545
PUBLISHER: International Union of Pure and Applied Chemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Disposable, **electrochem**. DNA-based biosensors were exploited for the **detn**. of low-**mol**.-wt. compds. with affinity for nucleic acids. The application is related to the mol. interaction between the surface-linked DNA obtained from calf thymus and the target pollutants or drugs, in order to develop a simple **device** for rapid screening of genotoxic or similar compds. The detn. of such compds. was measured by their effect on the oxidn. signal of the guanine peak of the DNA **immobilized** on the **electrode** surface and studied by chronopotentiometric or square-wave voltammetric anal. The DNA biosensors are able to detect known intercalating and groove-binding compds. such as daunomycin, polychlorinated biphenyls (PCBs), aflatoxin B1, and arom. amines. Applicability to river and waste water samples is discussed and reported.
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 10 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:78634 CAPLUS
DOCUMENT NUMBER: 134:128198
TITLE: Method and **device** for analysis of biological specimens by layered expression scanning
INVENTOR(S): Emmert-Buck, Michael R.
PATENT ASSIGNEE(S): United States Dept. of Health and Human Services, USA
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001007915	A2	20010201	WO 2000-US20354	20000726
WO 2001007915	A3	20010405		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-145613 P 19990726

AB The present invention involves methods, systems, and **devices** for analyzing a biol. material, such as a cellular or other specimen. The method includes placing the specimen on a substrate having different capture regions, such as contiguous layers, wherein the different capture regions of the substrate contain different identification mols., and transferring components of the specimen through the capture regions under conditions that allow the components to interact with different identification mols. in the different regions of the substrate. The components of the specimen can be transferred through the different layers (or other regions) of the substrate by capillary action of a soln. moving through the cellular specimen or by electrophoresis. The transfer of components of the specimen through the substrate may occur while maintaining a geometric correspondence to the specimen, such as the cytoarchitecture of a cellular specimen, for example by moving the components through parallel layers having positions that correspond to positions within the specimen. When the cellular architecture of the specimen is maintained, a correlation between the different identification mols. and the components of the cellular specimens may be made. The anal. can occur with one or more different discrete (for example cellular) specimens on a surface of the substrate. Examples of cellular specimens include, but are not limited to tissue sections, particularly tumor tissue sections. The cellular specimen can also include cultured cells or a cytol. sample. Cytostat tissue sections cut slightly thicker than usual, that is about 25 to about 50 .mu.m, improves the ability to **detect mols**. of moderate and low level abundance.

L13 ANSWER 11 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:22061 CAPLUS
DOCUMENT NUMBER: 134:219060
TITLE: DNA **electrochemical** biosensors
AUTHOR(S): Mascini, M.; Palchetti, I.; Marrazza, G.
CORPORATE SOURCE: Dipartimento di Sanita Pubblica, Epidemiologia e Chimica Analitica Ambientale, Universita di Firenze, Florence, 50121, Italy
SOURCE: Fresenius' J. Anal. Chem. (2001), 369(1), 15-22
CODEN: FJACES; ISSN: 0937-0633
PUBLISHER: Springer-Verlag
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review with 21 refs. Disposable **electrochem**. DNA-based biosensors are reviewed; they have been used for the **detn**.

of low-**mol**. wt. compds. with affinity for nucleic acids and for the detection of the hybridization reaction. The first application is related to the mol. interaction between surface-linked DNA and the target pollutants or drugs, in order to develop a simple **device** for rapid screening of toxic or similar compds. The detn. of such compds. was measured by their effect on the oxidn. signal of the guanine peak of calf thymus DNA **immobilized** on the **electrode** surface and investigated by chronopotentiometric anal. The DNA biosensor is able to detect known intercalating compds., such as daunomycin, polychlorinated biphenyls (PCBs), aflatoxin B1, and arom. amines. Applicability to river and waste water samples is also demonstrated. Disposable **electrochem**. sensors for the detection of a specific sequence of DNA were realized by **immobilizing** synthetic single-stranded oligonucleotides onto a graphite screen-printed **electrode**. The probes became hybridized with different concns. of complementary sequences present in the sample. The hybrids formed on the **electrode** surface were evaluated by chronopotentiometric anal. using daunomycin as indicator of the hybridization reaction. The hybridization was also performed using real samples. Application to apolipoprotein E (ApoE) is described, in this case samples have to be amplified by PCR and then analyzed by DNA biosensor. The extension of such procedures to samples of environmental interest or to contamination of food is discussed.

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 12 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:870676 CAPLUS
DOCUMENT NUMBER: 134:167884
TITLE: **Electrochemical** DNA biosensor for environmental monitoring
AUTHOR(S): Chiti, G.; Marrazza, G.; Mascini, M.
CORPORATE SOURCE: Dipartimento di Sanita Pubblica, Epidemiologia, Chimica Analitica Ambientale, Sez. Chimica Analitica, Florence, 50121, Italy
SOURCE: Anal. Chim. Acta (2001), 427(2), 155-164
CODEN: ACACAM; ISSN: 0003-2670
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A disposable, **electrochem**. DNA biosensor to det. toxic arom. amines was developed. This **device** relies on the intercalative or electrostatic collection of arom. amines onto an **immobilized** dsDNA or ssDNA layer (double strand or single strand obtained from several sources), followed by a chrono-potentiometric anal. The anodic signal of the guanine bases of DNA coated screen printed **electrodes** is strongly affected by structural or conformational modifications of the DNA layer accrued from DNA-analyte assocn. So the variation in the oxidative signal of guanine is taken as an index of the mol. recognition. When the analyte is electroactive, its oxidn. peak gives addnl. information; an interesting correlation was obsd. between the amt. of analyte trapped on the **electrode** and guanine peak variation. Sub-micromolar **detection** limits were obtained for **mols**. with >2 arom. rings after a 2 min

accumulation. This biosensor was also tested on actual wastewater samples; a comparison of results of classical genotoxicity tests confirmed the applicability of the method for actual samples.
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 13 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:707369 CAPLUS
DOCUMENT NUMBER: 133:234726
TITLE: Microscale total analysis system
INVENTOR(S): Rossier, Joel S.; Reymond, Frederic; Girault, Hubert H.
PATENT ASSIGNEE(S): Ecole Polytechnique Federale De Lausanne, Switz.
SOURCE: PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000058724	A1	20001005	WO 2000-EP2887	20000328
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1166103	A1	20020102	EP 2000-922589	20000328
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				

PRIORITY APPLN. INFO.: GB 1999-7249 A 19990329
WO 2000-EP2887 W 20000328

AB The invention relates to an **app**. for performing chem. assays in an aq. medium. The **app**. contains a reaction chamber(s) and a liq. in-flow channel connected to each chamber. The flow of liq. through the fluid in-flow channel to the reaction chamber is controlled by the presence of a hydrophobic inner surface on the walls of the in-flow channel. Under normal conditions fluid will not flow through the channel. However, application of an external force pushes the liq. through said channel into the reaction chamber. The invention is applicable to the monitoring of many different mol. interactions, in particular mol. recognition between an **immobilized** affinity partner and a species in soln., such as Ig/antigen interaction, DNA hybridization, haptamer-protein interaction, drug and virus **detection**, high throughput **screening** of synthetic **mols**. and for **detg**. the concn. and reaction kinetics of target species.
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 14 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:645919 CAPLUS
DOCUMENT NUMBER: 133:219767
TITLE: Self assembling arrays of **molecules** with coded affinity suitable for **screening** and diagnosis
INVENTOR(S): Montgomery, Donald D.
PATENT ASSIGNEE(S): Combimatrix Corporation, USA
SOURCE: PCT Int. Appl., 36 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000053311	A1	20000914	WO 2000-US6675	20000310

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-123894 P 19990311
AB A method is described for synthesis of a self assembling array of small mols. with coded affinity on a substrate, e.g., a glass plate. The method comprises (a) synthesizing .gtoreq.1 spatially multiplexed arrays of mols. having coded affinity on a substrate, e.g., using photolithog. masks or **electrochem**. methods, and (b) exposing the coded affinity array to a soln. that contains .gtoreq.1 material to be **immobilized** onto the array. The spatially multiplexed self assembling arrays can be used to assay the activity of a receptor toward each small **mol**. in the array, or to **detect** a target **mol**. in a biol. sample.
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 15 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:628358 CAPLUS
DOCUMENT NUMBER: 133:205067
TITLE: Card-based biosensor **device**
INVENTOR(S): Wong, Wah Y.; Chao, Heman; Segal, Donald; McElroy, Jerry
PATENT ASSIGNEE(S): Helix Biopharma Corp., Can.
SOURCE: PCT Int. Appl., 80 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

WO 2000052457	A1	20000908	WO 2000-CA206	20000302
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
US 6300141	B1	20011009	US 2000-518178	20000302

PRIORITY APPLN. INFO.: US 1999-122546 P 19990302

AB A diagnostic card **device** for use in detecting or quantitating an analyte present in a liq. sample, comprises a card substrate having a sample introduction region, a biosensor, and a sample-flow pathway communicating between the sample-introduction region and the biosensor, circuitry for generating an analyte-dependent **elec.** signal from the biosensor; and a signal-responsive element for recording such signal. In one embodiment, the biosensor includes a **detection** surface with surface-bound **mols.** of a first charged, coil-forming peptide capable of interacting with a second, oppositely charged coil-forming peptide to form a stable .alpha.-helical coiled-coil heterodimer, where the binding of the second peptide to the first peptide, to form such heterodimer, is effective to measurably alter a signal generated by the biosensor. The sample-flow pathway contains diffusibly bound conjugate of the second coil-forming peptide and the analyte (or an analyte analog) and **immobilized** analyte-binding agent. The analyte in the liq. sample and the conjugate compete for binding with the **immobilized** analyte-binding agent. Unbound conjugate migrates by capillarity to the biosensor. Liq. sample contg. conjugate migrates in the sample flow pathway by capillary action or is driven by a micropump. In another embodiment, the biosensor includes an **electrode** substrate coated with a high-dielec. hydrocarbon-chain monolayer, and having analyte-binding agent attached to the exposed monolayer surface. Binding of analyte to the monolayer-bound analyte-binding agent, and the resultant perturbation of the monolayer structure, causes ion-mediated electron flow across the monolayer.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 16 OF 29 CAPLUS COPYRIGHT 2002 ACS

ACCESSION NUMBER: 2000:628357 CAPLUS
DOCUMENT NUMBER: 133:219760
TITLE: Biosensor **device** and method involving coiled-coil heterodimer formation and detection
INVENTOR(S): Wong, Wah Y.; Chao, Heman; Segal, Donald; McElroy, Jerry
PATENT ASSIGNEE(S): Helix Biopharma Corporation, Can.
SOURCE: PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000052456	A1	20000908	WO 2000-CA205	20000302

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-122548 P 19990302

AB A diagnostic method and **device** for use in detecting or quantitating an analyte present in a liq. sample are disclosed. The method includes reacting an analyte-contg. sample with reagents capable of generating a first coil-forming peptide in soln. form. This peptide is then contacted with a biosensor whose **detection** surface has surface-bound **mols.** of a second, oppositely charged coil-forming peptide, under conditions effective to form a stable .alpha.-helical coiled-coil heterodimer on the detection surface. The formation of the coiled-coil heterodimer produces a measurable change in biosensor signal, which is measured to detect the presence of or quantitate the amt. of analyte in a sample. Also disclosed is a biosensor **device** for carrying out the reaction. In a competitive ELISA for PAK protein, anti-PAK mouse IgG coated in wells of a microtiter plate, polyglutamic acid peptide (E-coil peptide) conjugate with PAK protein, and a biosensor chip contg. C16 hydrocarbons and K-coil peptide (polylysine peptide) were used.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 17 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:535362 CAPLUS
DOCUMENT NUMBER: 133:132092
TITLE: Method and **apparatus** for detecting molecular binding events
INVENTOR(S): Hefti, John
PATENT ASSIGNEE(S): Signature Bioscience Inc., USA
SOURCE: PCT Int. Appl., 124 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000045170	A2	20000803	WO 2000-US2573	20000201

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ,

VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG
PRIORITY APPLN. INFO.: US 1999-243196 A1 19990201

AB Systems and methods for **detecting mol.** binding events and other environmental effects using the unique dielec. properties of the bound mol. structure or structures are presented. A mol. binding layer is coupled along the surface of a signal path. A test signal is propagated along the signal path, whereby the test signal couples to the mol. binding layer, and in response exhibits a signal response. Troponin-I was detected in anticoagulated whole human blood using a bioassay **device** coated with antibody to troponin-I.

L13 ANSWER 18 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:330477 CAPLUS
DOCUMENT NUMBER: 130:322688
TITLE: Nanoelectrode arrays for detection and characterization of proteins and nucleic acids
INVENTOR(S): Peeters, John P.
PATENT ASSIGNEE(S): Protiveris, Inc., USA
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9924823	A1	19990520	WO 1998-US23547	19981104
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6123819	A	20000926	US 1998-44350	19980319
AU 9913085	A1	19990531	AU 1999-13085	19981104
EP 1038171	A1	20000927	EP 1998-956598	19981104
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
BR 9815581	A	20010213	BR 1998-15581	19981104
JP 2001522999	T2	20011120	JP 2000-519775	19981104
US 6325904	B1	20011204	US 2000-547777	20000412

PRIORITY APPLN. INFO.:
US 1997-65373 P 19971112
US 1998-44350 A 19980319
WO 1998-US23547 W 19981104

AB An array of **electrodes** at the at. or nano scale (nanoelectrodes) is built on a chip. The spatial distribution, height, width and **electrochem.** compn. of the nanoelectrodes is varied, such that protein-specific electronic receptors are built directly on the chip with the nanoelectrodes without the use of any specific binding agents or mols. Because of

their size, a very large no. of different receptors can be built as arrays on a single chip. The chip can be used to **detect**, characterize and quantify single **mols**. in soln. such as individual proteins, complex protein mixts., DNA or other mols.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 19 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1999:127047 CAPLUS
DOCUMENT NUMBER: 130:179611
TITLE: **Electrochemical** reporter system with redox recycling for immunoassay and molecular biology procedures
INVENTOR(S): Macphee, Robert D.; Taylor, Clive R.; Hintsche, Rainer; Seitz, Rene
PATENT ASSIGNEE(S): University of Southern California, USA; Fraunhofer Institut Siliziumtechnologie
SOURCE: PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9907879	A1	19990218	WO 1998-US16714	19980812
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9889039	A1	19990301	AU 1998-89039	19980812
EP 1003905	A1	20000531	EP 1998-940857	19980812
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2001512691	T2	20010828	JP 2000-506361	19980812

PRIORITY APPLN. INFO.:
US 1997-55466 P 19970812
US 1997-55759 P 19970814
US 1998-105538 A 19980626
US 1998-105539 A 19980626
WO 1998-US16714 W 19980812

AB An immunochem. and mol. biol. endpoint reporter system in which reaction products, coupled to **electrochem**. active mols. susceptible to redox recycling or coupled to enzymes capable of proportional generation of said **electrochem**. active **mols**., are **detected** and/or quantitated using amperometry in conjunction with a silicon microchip possessing a closely spaced interdigitated array of nobel metal **electrodes**. The wells of a microtiter plate were treated successively with HIV p24 antigen, blocking buffer, patient serum, biotinylated Fc-Fab2 antibody fragments, avidin-.beta.-D-galactosidase conjugate, and enzyme substrate, p-aminophenyl-.beta.-

D-galactopyranoside. Free **electrochem**. redox active p-aminophenol was detd. by an interdigitated thin-film metal **electrode** sensor. The redox current clearly distinguished between pos. and neg. blood samples; in the pos. samples, it proportionally reflected differences in concn. of p24 antibodies in the serum.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L13 ANSWER 20 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:576485 CAPLUS
DOCUMENT NUMBER: 129:172760
TITLE: Detection of analytes using electrochemistry
INVENTOR(S): Setford, Steven John
PATENT ASSIGNEE(S): Cranfield University, UK
SOURCE: Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 859230	A1	19980819	EP 1998-200371	19980209
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

PRIORITY APPLN. INFO.: EP 1997-200369 19970210

AB The invention described in this document relates to methods and **app**. used to perform diagnostic assays in which the means of detection is based on **electrochem**. methods. The detection of specific analytes is facilitated by the use of labeled materials that are capable of generating **elec**. signals under a given set of assay conditions. The preferred labels are enzymic in nature and operate by generating or consuming **electrochem**. active species in the assay environment. The assay is performed in a suitable flow cell or flowing liq. system **device**, incorporating a solid phase material located such that it is in intimate contact with the liq. being passed through the flow cell or flowing liq. system and also in close proximity to a working **electrode**. This **electrode** is poised at an appropriate potential against a ref. **electrode** and is able to detect **electrochem**. active substances in the surrounding liq. Normally the flow cell or flowing liq. system will also house a ref. **electrode** and, if required, a counter **electrode**. In a typical embodiment, a sample suspected of contg. the analyte to be **detected** is mixed with a **mol**. species having specific binding affinity for this analyte. This mol. species is conjugated to an enzyme label. The labeled specific binding mol.- analyte complex is then **immobilized** onto the solid phase material, located in the vicinity of the working **electrode**. The flow cell or flowing liq. system is then rinsed with a soln. prior to the addn. of substrate soln. for the enzyme label. The enzyme label serves to convert the substrate to a product, the extent of the reaction being related to the amt. of bound analyte present. The depletion/prodn. of electro-active material is monitored at the working

electrode. The methods and **devices** described by this invention are particularly suited for samples contg. species that cause interference in conventional assays. The flow cell or flowing liq. system design allows removal of such species prior to measurement.

L13 ANSWER 21 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:576484 CAPLUS
DOCUMENT NUMBER: 129:172752
TITLE: Detection of analytes using electrochemistry
INVENTOR(S): Van Es Remco, Maria
PATENT ASSIGNEE(S): Gist-Brocades B.V., Neth.
SOURCE: Eur. Pat. Appl., 27 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 859229	A1	19980819	EP 1998-200370	19980209
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
AU 9853015	A1	19980813	AU 1998-53015	19980209
US 6100045	A	20000808	US 1998-20561	19980209

PRIORITY APPLN. INFO.: EP 1997-200368 A 19970210

AB The present invention relates to methods and means for carrying out diagnostic assays. In particular it relates to such assays whereby the detection means is based on **electrochem**. reactions. This means that the label to be detected provides an **elec**. signal. Preferred labels are enzymes giving such a signal. Provided is a flow cell whereby a solid phase is provided in a flow stream of the sample, in close proximity to a working **electrode** to detect any **elec**. signal. In a typical embodiment, a sample is mixed with mol. having specific binding affinity for an analyte of which the presence in the sample is to be **detected**, whereby said specific binding **mol**. is provided with a label. The conjugate of labeled specific binding mol. and analyte is then **immobilized** on the solid phase in the vicinity of the working **electrode**, the flow cell is rinsed with a soln. and afterwards a substrate soln. for the label (an enzyme) is provided upon which an **elec**. signal is generated and can be detected by the working **electrode**. Normally the flow cell will also be provided with a ref. **electrode** and optionally a counter **electrode**. The methods and **devices** of the present invention are particular useful for liqs. which comprise many substances that may disturb measurement in conventional assays. The design of the flow cell allows for removal of said interfering substances before measurement. In a preferred embodiment at least part of the solid phase is provided in the form of magnetic beads. The magnetic beads can be **immobilized** near the working **electrode** by means of a magnetic field provided by a magnet of any kind. In this embodiment the solid phase can be mixed with the sample thereby creating a longer reaction time, a better sensitivity and a higher speed of the assay. Also the magnetic beads can be easily rinsed from the flow cell by removing the

magnetic field. They can then be easily recycled.

L13 ANSWER 22 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:550560 CAPLUS
DOCUMENT NUMBER: 129:186420
TITLE: **Electrochemical** probes and **apparatus** for detection of molecular interactions and drug discovery
INVENTOR(S): Fowlkes, Dana M.; Thorp, H. Holden
PATENT ASSIGNEE(S): The University of North Carolina At Chapel Hill, USA; Novalon Pharmaceutical Corporation
SOURCE: PCT Int. Appl., 104 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9835232	A2	19980813	WO 1998-US2440	19980206
WO 9835232	A3	19990304		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9866517	A1	19980826	AU 1998-66517	19980206
AU 729118	B2	20010125		
EP 970375	A2	20000112	EP 1998-908493	19980206
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
US 2002012943	A1	20020131	US 1998-19679	19980206
NO 9903764	A	19990928	NO 1999-3764	19990803

PRIORITY APPLN. INFO.: US 1997-36919 P 19970206
US 1997-59049 P 19970916
WO 1998-US2440 W 19980206

AB This invention relates to methods and **app.** for performing **electrochem.** analyses. The invention provides an **electrochem. app.** for performing potentiometric analyses for detecting specific binding between a first member of a biol. binding pair **immobilized** on an **electrode** and a second member of a biol. binding pair that is **electrochem.** labeled, in the presence of an **electrochem.** mediator. Methods for using the **app.** of the invention for performing binding and competition binding assays are provided. The invention also provides methods for performing high throughput screening assays for detecting inhibition of specific binding between the members of the biol. binding pair for use in drug development, biochem. anal. and protein purifn. assays.

L13 ANSWER 23 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1998:550555 CAPLUS

DOCUMENT NUMBER: 129:172747
TITLE: Small volume in vitro analyte sensor
INVENTOR(S): Heller, Adam; Feldman, Benjamin J.; Say, James; Vreeke, Mark S.; Tomasco, Michael F.
PATENT ASSIGNEE(S): E. Heller & Company, USA
SOURCE: PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9835225	A1	19980813	WO 1998-US2652	19980206
W: AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9861578	A1	19980826	AU 1998-61578	19980206
EP 958495	A1	19991124	EP 1998-906328	19980206
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2000509507	T2	20000725	JP 1998-535046	19980206
US 6143164	A	20001107	US 1998-213040	19981216
US 6120676	A	20000919	US 1999-326235	19990604

PRIORITY APPLN. INFO.: US 1997-795767 A2 19970206
WO 1998-US2652 W 19980206

AB A sensor designed to det. the amt. and concn. of analyte in a sample having a vol. of less than about 1 .mu.L has a working **electrode** coated with a non-leachable redox mediator. The redox mediator acts as an electron transfer agent between the analyte and the **electrode**. In addn., a second electron transfer agent, such as an enzyme, can be added to facilitate the electrooxidn. or electroredn. of the analyte. The redox mediator is typically a redox compd. bound to a polymer. The preferred redox mediators are air oxidizable. The amt. of analyte can be detd. by coulometry. One particular coulometric technique includes the measurement of the current between the working **electrode** and a counter or ref. **electrode** at two or more times. The charge passed by this current to or from the analyte is correlated with the amt. of analyte in the sample. Other **electrochem**. detection methods, such as amperometric, voltammetric, and potentiometric techniques, can also be used. The invention can be used to **det**. the concn. of a **biomol**., such as glucose or lactate, in a biol. fluid, such as blood or serum. An enzyme capable of catalyzing the electrooxidn. or electroredn. of the biomol. is provided as a second electron transfer agent. A glucose sensor was constructed comprising a Mylar film with a carbon **electrode** overlaid with a water-insol. dielec. insulator having an opening at the center.. The open area was coated with a redox mediator formed by complexing poly(1-vinylimidazole) with Os(4,4'-dimethoxy-2,2'-bipyridine)2Cl2 followed by crosslinking

glucose oxidase with the osmium polymer using polyethylene glycol diglycidyl ether. A PTFE spacer was placed on the **electrode** surrounding the mediator-covered surface. A sorbent of nylon was placed in contact with the mediator-covered surface of the working **electrode**. A counter/ref. **electrode** was placed in contact with the spacer and the side of the sorbent opposite to the working **electrode** so that the two **electrodes** were facing each other. Clamed polycarbonate plates pressed the **electrodes** together. Sample (0.5 .mu.L) was wicked into the sorbent via a small nylon tab and glucose was detd. coulometrically.

L13 ANSWER 24 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1997:151861 CAPLUS
DOCUMENT NUMBER: 126:261049
TITLE: Towards amperometric immunosensor **devices**
AUTHOR(S): Tiefenauer, Louis X.; Kossek, Sebastian; Padeste, Celestino; Thiebaud, Pierre
CORPORATE SOURCE: Micro- and Nanostructures Laboratory, Paul scherrer Institut, Villigen PSI, CH-5235, Switz.
SOURCE: Biosens. Bioelectron. (1997), 12(3), 213-223
CODEN: BBIOE4; ISSN: 0956-5663
PUBLISHER: Elsevier
DOCUMENT TYPE: Journal
LANGUAGE: English
AB In contrast to optical immunosensors, the **electrochem.** detection of an immunoanal. reaction does require a labeling, but allows an easier discrimination of specific and non-specific binding. We present a concept and first results for a multivalent amperometric immunosensor system which is based on silicon technol. The capture mol. streptavidin, covalently **immobilized** on silica, allows the **immobilization** of biotinylated antigens at a defined d. A nanostructured gold **electrode** serving as a stable network of nanowires is expected to be beneficial for the **electrochem. detection** of bound ferrocene-labeled antibody **mols.** The results presented focus on site-specific **immobilization** of streptavidin on silica and redn. of non-specific binding of proteins.

L13 ANSWER 25 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1996:354007 CAPLUS
DOCUMENT NUMBER: 125:2970
TITLE: Automated molecular biological diagnostic system including generator, microelectronic relay system, and **electrodes**
INVENTOR(S): Heller, Michael J.; Tu, Eugene; Montgomery, Donald D.; Butler, William F.
PATENT ASSIGNEE(S): Nanogen, USA
SOURCE: PCT Int. Appl., 59 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 36
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9607917	A1	19960314	WO 1995-US11333	19950906

W: AU, BR, CA, CN, FI, JP, NZ
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE

US 5632957	A	19970527	US 1994-304657	19940909
AU 9535070	A1	19960327	AU 1995-35070	19950906
AU 702773	B2	19990304		
BR 9508908	A	19971028	BR 1995-8908	19950906
JP 10505497	T2	19980602	JP 1995-509662	19950906
EP 871888	A1	19981021	EP 1995-931746	19950906

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE

FI 9700957	A	19970507	FI 1997-957	19970306

PRIORITY APPLN. INFO.:

US 1994-304657	A	19940909
US 1993-146504	A2	19931101
US 1994-271882	A2	19940707
WO 1995-US11333	W	19950906

AB Self-addressable, self-assembling microelectronic system for performing mol. diagnosis, anal., multi-step and multiplex reactions in microscopic formats. Actively controlled reactions include nucleic acid hybridization, immunoassays, clin. diagnosis and multi-step combinatorial biopolymer synthesis. Controller interfaces with user via input/output **devices** preferably including a graphical display. The controller may interface with a power supply and interface, the interface providing selective connection to individual microlocations, polarity reversal, and selective potential or current levels to individual **electrodes**. A combined system for performing DNA sample prepn., hybridization, detection and data anal. integrates multiple steps. Charged materials are transported preferably by free field electrophoresis. DNA complexity redn. is preferably achieved by binding DNA to a support, cleaving unbound materials such as by restriction enzymes, and transporting the cleaved fragments. Active, programmable matrix **devices** include a square matrix pattern with fanned out **elec.** connections and optional **elec.** connections beneath specific microlocations resulting in a highly automated DNA diagnostic system.

L13 ANSWER 26 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1994:101236 CAPLUS
DOCUMENT NUMBER: 120:101236
TITLE: Biomolecular switch for biosensors or data acquisition/processing **devices** containing **immobilized** biological macromolecules
INVENTOR(S): Watsuji, Toru; Cass, Anthony
PATENT ASSIGNEE(S): Sharp Kabushiki Kaisha, Japan
SOURCE: Brit. UK Pat. Appl., 36 pp.
CODEN: BAXXDU
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 2266182	A1	19931020	GB 1993-6687	19930331
GB 2266182	B2	19960828		
JP 06163876	A2	19940610	JP 1993-74845	19930331

JP 3226373 B2 20011105
PRIORITY APPLN. INFO.: GB 1992-7086 A 19920331
AB A biomol. switch for use in data acquisition/processing **devices** and in biosensors comprises an array of proteins **immobilized** on a support such as quartz or aminopropyl glass beads, each protein of the array being capable of reversible interconversion between 2 or more states. An **elec.** input is used to modulate the pH and/or ligand concn. (the stimulus) in the microenvironment of the proteins which causes at least some of the protein mols. to selectively convert from a stimulus-free to a stimulus-dependent state. The interconversion between these states is measured by an output means which monitors changes in fluorescence patterns. Alternatively, optical techniques such as a laser pulse can be employed to modulate the microenvironment of the proteins. Other macromols. such as nucleic acids and polysaccharides may also be used. Figures show designs for various **app.**, e.g., **electrodes, electrochem.** cell, fluorescence spectrochem. cell, etc. A riboflavin sensor was constructed having riboflavin-binding protein (RBP) **immobilized** on aminopropyl controlled pore glass beads in a column, a Pt mesh working **electrode** buried in the beads, notches in the bottom of the column extension to allow for liq. connection to the bulk soln. and also for the entry of a tube to permit the removal of trapped air, and counter and ref. **electrodes** in the bulk soln. **Electrode** potential (affecting pH) was used to control riboflavin binding or release from the **immobilized** RBP. Free riboflavin was measured in a fluorimeter.

L13 ANSWER 27 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:578628 CAPLUS
DOCUMENT NUMBER: 115:178628
TITLE: **Electrochemical** and fiber optic biosensors for highly selective molecular targeting
AUTHOR(S): Coulet, P. R.
CORPORATE SOURCE: Lab. Genie Enzym., Univ. Lyon 1, Villeurbanne, 69622, Fr.
SOURCE: Anal. Lett. (1991), 24(8), 1333-45
CODEN: ANALBP; ISSN: 0003-2719
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Ultrasensitive and specific biosensors have been developed in this group, based on either **electrochem.** or optical transducers closely assocd. with a sensing layer including specific **immobilized** enzyme systems. H2O2 generated in enzymic reactions catalyzed by oxidases could be detected either **electrochem.** on a Pt **electrode** or optically monitored in the presence of peroxidase by using luminol-mediated chemiluminescence. The detection of ATP and NAD(P)H involved in numerous anal. of biol. samples could also be achieved at the picomole level with photobiosensors using bioluminescence enzymes either from firefly or bacterial origin. By using auxiliary enzymes in combination with these enzymic systems, the stereoselective detection of a variety of analytes could also be conducted in complex mixts. No pretreatment of the sample, even turbid, was required, avoiding difficulties encountered when classical spectroscopic methods are used. Only a few microliters of sample

were necessary making such **devices** attractive in various domains of biotechnol., biomedical engineering or environment control.

L13 ANSWER 28 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1990:154801 CAPLUS
DOCUMENT NUMBER: 112:154801
TITLE: Chemical sensors employing catalytic antibodies and methods using them
INVENTOR(S): Blackburn, Gary F.; Durfor, Charles; Powell, Michael J.; Massey, Richard J.
PATENT ASSIGNEE(S): IGEN Inc., USA
SOURCE: PCT Int. Appl., 102 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 8905977	A1	19890629	WO 1988-US4426	19881212
W: AU, BR, DK, FI, JP, KR, NO, SU				
RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
ZA 8809546	A	19900829	ZA 1988-9546	19881202
AU 8929496	A1	19890719	AU 1989-29496	19881212
EP 362304	A1	19900411	EP 1989-901650	19881212
EP 362304	B1	19970305		
R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
JP 02501860	T2	19900621	JP 1988-501577	19881212
AT 149687	E	19970315	AT 1989-901650	19881212
CA 1308021	A1	19920929	CA 1988-586571	19881221
IL 88751	A1	19940624	IL 1988-88751	19881221
AU 9453110	A1	19940310	AU 1994-53110	19940110
AU 669758	B2	19960620		

PRIORITY APPLN. INFO.: US 1987-138542 19871224
WO 1988-US4426 19881212

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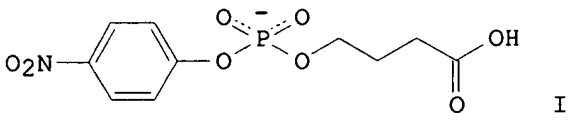

I

AB Systems and methods employing the title sensors are provided. The sensors are used for detecting a chem. or phys. change (e.g. pH or temp.), or for detecting an analyte of interest or binding of an analyte of interest. Transducers may be colorimetric, piezoelec., optical fiber, potentiometric, lipid membrane, etc. Thus, catalytic monoclonal antibody 48G7 was produced by std. techniques, using BALB/C mice immunized with the bovine serum conjugate of the 4-nitrophenylphosphonate I. Catalytic antibody 48G7 catalyzed the hydrolysis of the carbonate corresponding to I with Michaelis-Menton kinetics. The antibody was trapped on a miniature pH **electrode** and used to detect pH changes resulting from

hydrolysis of Me p-nitrophenylcarbonate (MpNPC). An **electrode** with trapped nonspecific antibody and a ref. **electrode** were also employed (**electrode** configuration schematic diagram given). Following **electrode** stabilization, differential responses of the **electrodes** to 2 successive addns. and dilns. of MpNPC were obsd. The differential response of the **electrodes** was small but reproducible. The pos. direction of the response was as expected for the prodn. of H+ at the surface of the catalytic antibody **electrode**. On diln. of the sample, response diminished, verifying sensor reversibility. In the presence of transition-state analog I, the system did not respond to addns. of MpNPC, but response was regenerated by soaking the sensor in a buffer free of I for 2 h.

L13 ANSWER 29 OF 29 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1987:512111 CAPLUS
DOCUMENT NUMBER: 107:112111
TITLE: Enzymic electrocatalysis as a strategy for **electrochemical** detection in heterogeneous immunoassays
AUTHOR(S): Gyss, Catherine; Bourdillon, Christian
CORPORATE SOURCE: Lab. Technol. Enzym., Univ. Compiegne, Compiegne, 60206, Fr.
SOURCE: Anal. Chem. (1987), 59(19), 2350-5
CODEN: ANCHAM; ISSN: 0003-2700
DOCUMENT TYPE: Journal
LANGUAGE: English

AB An extn.-type enzyme immunoassay taking place directly at the surface of a glassy carbon **electrode** and based on electrocatalytic detection of enzyme-labeled antibody is described. Such a configuration, where the carbon **electrode** is both the immunol. solid phase and the **electrochem. detector,** ensures a proximity at **mol.** level between catalytic and **electrochem.** sites. The amperometric detection of the **immobilized** enzyme activity is thus very sensitive (better than 10-15 mol/cm2 of **electrode** surface) and the overall sensitivity of the assay may be modulated by the choice of the ratio between the assay vol. and the capture solid phase area. Exptl., the successive steps for the construction of a sandwich immunoassay configuration have been optimized, including the adsorption of the capture antibody onto the pretreated carbon surface, its subsequent capacity to retain an immunol. binding, and the parameters which govern the electrocatalytic current. A quant. assay of IgG with glucose oxidase as label was developed with an actual detection limit reaching the femtomole level in the sample. With the aim of the future development of automatic **app.** using this principle, another leading idea presented is the successive reuse of the carbon surface after a simple **electrochem.** cleaning.

[redacted] BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, JAPIO' ENTERED AT 12:40:04 ON 12 FEB 2002)
27 S L13
[redacted] (5 DUPLICATES REMOVED)

L15 ANSWER 1 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:570673 BIOSIS
DOCUMENT NUMBER: PREV200100570673

TITLE: Card-based biosensor **device**.
AUTHOR(S): Segal, Donald (1); Chao, Heman; Wong, Wah Y.; McElroy, Jerry
CORPORATE SOURCE: (1) Stouffville Canada
ASSIGNEE: Helix BioPharma Corporation, Aurora, Canada
PATENT INFORMATION: US 6300141 October 09, 2001
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (Oct. 9, 2001) Vol. 1251, No. 2, pp. No Pagination. e-file.
ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English

AB A diagnostic card **device** for use in detecting or quantitating an analyte present in a liquid sample, comprising a card substrate having a sample introduction region, a biosensor, and a sample-flow pathway communicating between the sample-introduction region and the biosensor, circuitry for generating an analyte-dependent **electrical** signal from the biosensor; and a signal-responsive element for recording such signal. In one embodiment, the biosensor includes a **detection** surface with surface-bound **molecules** of a first charged, coil-forming peptide capable of interacting with a second, oppositely charged coil-forming peptide to form a stable alpha-helical coiled-coil heterodimer, where the binding of the second peptide to the first peptide, to form such heterodimer, is effective to measurably alter a signal generated by the biosensor. The sample-flow pathway contains diffusibly bound conjugate of the second coil-forming peptide and the analyte (or an analyte analog) and **immobilized** analyte-binding agent. The analyte in the liquid sample and the conjugate compete for binding with the **immobilized** analyte-binding agent. Unbound conjugate migrates by capillarity to the biosensor. Liquid sample containing conjugate migrates in the sample flow pathway by capillary action or is driven by a micro-pump. In another embodiment, the biosensor includes an **electrode** substrate coated with a high-dielectric hydrocarbon-chain monolayer, and having analyte-binding agent attached to the exposed monolayer surface. Binding of analyte to the monolayer-bound analyte-binding agent, and the resultant perturbation of the monolayer structure, causes ion-mediated electron flow across the monolayer.

L15 ANSWER 2 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-616133 [71] WPIDS
DOC. NO. CPI: C2001-184392
TITLE: **Electrical detection** of probe-target **molecule** interactions, involves **detecting electrical** signals in microelectrodes, before and after exposing to sample containing target, and comparing the signals.
DERWENT CLASS: A89 D16 J04
INVENTOR(S): CHOONG, V; LI, C; MARACAS, G; SAWYER, J R; ZHANG, P
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 94
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG

WO 2001061053 A2 20010823 (200171)* EN 53
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001038573 A 20010827 (200176)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001061053 A2		WO 2001-US5476	20010220
AU 2001038573 A		AU 2001-38573	20010220

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001038573 A	Based on	WO 200161053

PRIORITY APPLN. INFO: US 2000-506178 20000217
AN 2001-616133 [71] WPIDS
AB WO 200161053 A UPAB: 20011203
NOVELTY - **Electrical** (E) detection of molecular interactions between **immobilized** probe (P) and protein/peptide target **molecule** (TM), comprising **detecting** an **electrical** signal (E1) in microelectrodes (M), in contact with linker moieties (L) to which (P) is **immobilized**, exposing (M) to sample containing TM, detecting **electrical** signal (E2) in (M), and comparing E1 and E2 to determine if they differ, is new.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an **apparatus** (A) for (E), comprising:

(a) a supporting substrate (S);

(b) one or more (M) in contact with (S);

(c) one or more linking moieties (L) in contact with (M) and to which (P) is **immobilized**;

(d) at least one counter-**electrode** (CE) in **electrochemical** contact with (M);

(e) a means for producing an **electrical** signal at each (M);

(f) a means for detecting changes in the **electrical** signal at each (M); and

(g) an electrolyte solution in contact with (M), (L) and CE, where molecular interactions between (P) and TM are detected as a difference in the **electrical** signal at each (M) in the presence and absence of TM.

USE - For **electrical** detection of molecular interaction between an **immobilized** probe molecule and a protein or peptide target molecule (claimed). The method is also useful for **detecting** interactions between biological **molecules**, and has wider application in the medical, genetic and molecular biological fields.

ADVANTAGE - The method does not require the use of **electrochemical** or other reporters to obtain measurable

signals. The method is an inexpensive and safer alternative to standard immunological and molecular detection methods. The method is simple, and has an increased reproducibility and sensitivity compared to prior art methods.
Dwg.0/4

L15 ANSWER 3 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-488896 [53] WPIDS
CROSS REFERENCE: 2001-442253 [47]; 2001-442255 [47]; 2001-451890 [48]; 2001-451908 [48]; 2001-451909 [48]; 2001-451912 [48]; 2001-451938 [48]; 2001-451939 [48]; 2001-457603 [49]; 2001-457740 [49]; 2001-465363 [49]; 2001-465571 [50]; 2001-465578 [50]; 2001-465705 [50]; 2001-476114 [50]; 2001-476164 [50]; 2001-476197 [50]; 2001-476198 [50]; 2001-476199 [50]; 2001-476282 [51]; 2001-476283 [51]; 2001-483140 [52]; 2001-483233 [50]; 2001-488707 [53]; 2001-488788 [50]; 2001-488875 [53]
DOC. NO. CPI: C2001-146849
TITLE: Detection of single nucleotide polymorphisms, comprises electrospray/mass spectrometry and primer extension.
DERWENT CLASS: B04 D16
INVENTOR(S): SCHULTZ, G A; VAN PELT, C K; ZHANG, S
PATENT ASSIGNEE(S): (ADVI-N) ADVION BIOSCIENCES INC
COUNTRY COUNT: 93
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001057263	A1	20010809	(200153)*	EN	79
AU 2001038030	A	20010814	(200173)		

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001057263	A1	WO 2001-US3706	20010202
AU 2001038030	A	AU 2001-38030	20010202

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2001038030	A	Based on	WO 200157263

PRIORITY APPLN. INFO: US 2001-757992 20010110; US 2000-179844P 20000202
AN 2001-488896 [53] WPIDS
CR 2001-442253 [47]; 2001-442255 [47]; 2001-451890 [48]; 2001-451908

[48]; 2001-451909 [48]; 2001-451912 [48]; 2001-451938 [48]; 2001-451939 [48]; 2001-457603 [49]; 2001-457740 [49]; 2001-465363 [49]; 2001-465571 [50]; 2001-465578 [50]; 2001-465705 [50]; 2001-476114 [50]; 2001-476164 [50]; 2001-476197 [50]; 2001-476198 [50]; 2001-476199 [50]; 2001-476282 [51]; 2001-476283 [51]; 2001-483140 [52]; 2001-483233 [50]; 2001-488707 [53]; 2001-488788 [50]; 2001-488875 [53]

AB WO 200157263 A UPAB: 20011217

NOVELTY - Detecting (M1) single nucleotide (nt) polymorphisms (SNPs), comprising:

(i) mixing a target nucleic acid (NA), an oligonucleotide primer, an NA polymerizing enzyme, and several types of nt analogs present at an amount (A1);

(ii) extending the primer by adding an nt to the target at an active site;

(iii) determining the amounts (A2) of each type of analog;

(iv) comparing A1 and A2; and

(v) determining the target nt.

DETAILED DESCRIPTION - The primer is complementary to a portion of the target NA, and the nt analog is complementary to the nt of the target at the active site. Determining the target nt is done by identifying the type of analog.

INDEPENDENT CLAIMS are also included for the following:

(1) an electrospray system (I) comprising:

(a) an electrospray **device** comprising: a substrate with an injection and opposing ejection surface where the substrate is an integral monolith comprising entrance and exit orifices on the injection and ejection surfaces respectively, a channel between the orifices, and a recess in the ejection surface and surrounding exit orifice defining a nozzle on the ejection surface; and

(b) a sample preparation **device** to transfer fluids to the electrospray **device**, comprising a liquid passage and (i) a metal chelating resin and/or (ii) a molecular weight filter, for treating fluids passing through the liquid passage;

(2) a system (II) for processing droplets/sprays of fluid, comprising (I), and a **device** to receive fluid droplets/spray from the exit orifice of (I); and

(3) a reagent composition (III) comprising: an aqueous carrier, an oligonucleotide primer, a mixture of nt analogs, magnesium acetate, a buffer, and a NA polymerizing enzyme.

USE - The invented method is used to detect single nucleotide polymorphisms (SNPs) (claimed), useful for gene location, drug resistance testing, disease diagnosis, and identity testing.

ADVANTAGE - The method makes use of electrospray/mass spectrometry which can be used to accurately quantify small molecules for SNP genotyping and can provide an advantage when analyzing pooled DNA samples for determining SNP sequence frequencies. Single nucleotide primer extension means that all variable nucleotides are identified with optimal discrimination using the same reaction conditions. Detection does not require hybridization procedures and by quantifying the unreacted analog nucleotides after primer extension, means a faster, less laborious, more accurate, specific and sensitive method without the need for modified or labeled bases. The invented method makes use of double-stranded DNA, so there is no need to isolate and separate single-stranded DNA. It can be carried out in solution with free primers so that improved reaction kinetics are achieved, and there is no need to **immobilize** either the target DNA or SNP

primer. There is no need for complex tagging of primer extension nucleotides or nucleotide bases. The method is highly suited to high throughput screening and can identify both homo- and heterozygous SNPs in the same reaction. The invented method requires only one step of sample clean up through solid phase extraction that can be miniaturized and automated. Prior art methods for SNP detection required hybridization where the efficiency of hybridization and thermal stability of hybrids formed depend strongly on the reaction conditions. The degree of destabilization of the hybrid molecule by a mismatched base at one position is dependent on the flanking nucleotide sequence. It was therefore difficult to design a single set of conditions providing optimal signal intensities and discrimination of a large number of sequences simultaneously. Using DNA chips meant a complicated setup of assays and mathematical algorithms for data interpretation. The 5'-exonuclease assay was time consuming and expensive to establish and optimize reaction conditions for each locus. The matrix assisted laser desorption ionization-time of flight (MALDI-TOF) mass spectrometry methods required complex sample preparation, obviated in the invention since the extended reaction mixture is directly analyzed by electrospray mass spectrometry. The data analysis is less complicated due to detection of the same four low molecular weight **molecules** for any SNP compared to **detection** of large oligonucleotides of varying composition in MALDI-TOF. Dwg.0/20

L15 ANSWER 4 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-496601 [54] WPIDS
DOC. NO. CPI: C2001-149097
TITLE: Electronic/**electrochemical** **biomolecules detection** **apparatus** has biochip array with multiple wells, having one conductive **electrode** as bottom on substrate.
DERWENT CLASS: A96 B04 D16
INVENTOR(S): MARACAS, G; SHI, S; ZHANG, P
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 94
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001043870	A2	20010621	(200154)*	EN	22

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU 2001021089 A 20010625 (200162)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001043870	A2	WO 2000-US34222	20001214
AU 2001021089	A	AU 2001-21089	20001214

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001021089 A	Based on	WO 200143870

PRIORITY APPLN. INFO: US 1999-464500 19991215
AN 2001-496601 [54] WPIDS
AB WO 200143870 A UPAB: 20010924
NOVELTY - A row-and-column addressable array (I) (9), is formed on a substrate, that comprises a number of individual well structures (7) having probes **immobilized** on them and each well further comprising two **electrodes** that can be individually addressed. Bottom of the well comprises one **electrode** surface, while the other **electrode** surrounds the top of the well.

DETAILED DESCRIPTION - A row-and-column addressable array (I) comprises a conductive **electrode** layer (CEL) (1), an insulative dielectric layer (IDL) (2), a conductive metal layer (CML) (3), another IDL (4) and another CEL (5) sequentially arranged on a solid non-porous supporting substrate (6). Several well structures (7) are formed in the substrate, where second CEL (5), IDL (2), CML (3) and IDL (4) are not present. The bottoms of the wells are formed by CEL (1) and a pair of **immobilized** probes are provided in each well.

USE - (I) is useful for electronic or **electrochemical** detection of molecular interactions between an **immobilized** probe and an **electrochemically** active reporter-labeled target molecule, where the reporter groups comprise ruthenium, cobalt, iron or osmium. The molecular interactions detected are single base mismatches within nucleic acid probe-target complexes or quantification of **electrochemically** active receptor-labeled target molecules for gene expression analyses. The method involves exposing the well structures in an x-y addressable array to an electrolyte solution containing **electrochemically**-labeled target molecule to generate probe-target complexes and detecting an **electrical** signal in the well structures in the array. The molecular interactions between an **immobilized** probe and labeled target **molecule** are **detected** by measuring AC impedance, cyclic voltammetry, stripping voltammetry, pulse voltammetry, square wave voltammetry, AC voltammetry, hydrodynamic modulation voltammetry, potential step method, potentiometric measurements, amperometric measurements, current step method or their combinations. AC impedance is measured over a range of frequencies before and after exposing the well structures in the array to the electrolyte solution or by transient methods with AC signal perturbation superimposed upon a DC potential applied to an **electrochemical** cell, by impedance analyzer, lock-in amplifier, AC bridge, AC voltammetry or their combinations. (I) is also useful for **electrical** detection of molecular interactions between **immobilized** probe and target **molecule** (all claimed). The **detectable** **biomolecules** include complementary nucleic acid strands, ligand/receptor, agonist/receptor, antagonist/receptor pairs, antigens and their cognate antibodies, enzyme/substrate and enzyme/inhibitor combinations.

ADVANTAGE - Both impedance and **electrochemical** measurements can be performed in the same assay using the same x-y addressable array to enhance the sensitivity and reduce system noise resulting from nonspecific binding of biomolecules.

DESCRIPTION OF DRAWING(S) - The figure shows the cross section view of the x-y addressable array.

Conductive **electrode** layers 1,5
Insulative dielectric layers 2,4
Conductive metal layer 3
Solid supporting substrate 6
Well structure 7
x-y addressable array 9

Dwg.1/5

L15 ANSWER 5 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD

ACCESSION NUMBER: 2001-381713 [40] WPIDS
DOC. NO. CPI: C2001-117001
TITLE: **Apparatus** for **electric** or **electrochemical** detection of molecular interactions between an **immobilized** probe and an **electrochemically** active reporter-labeled target molecule.
DERWENT CLASS: B04 D16
INVENTOR(S): CHOONG, V; GALLAGHER, S; GASKIN, M; LI, C; MARACAS, G; SHI, S
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 94
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001042508	A2	20010614	(200140)*	EN	63

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

AU 2001029072 A 20010618 (200161)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001042508	A2	WO 2000-US33497	20001211
AU 2001029072	A	AU 2001-29072	20001211

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001029072	A Based on	WO 200142508

PRIORITY APPLN. INFO: US 1999-459685 19991213; US 1999-458501 19991209; US 1999-458533 19991209
AN 2001-381713 [40] WPIDS
AB WO 200142508 A UPAB: 20010719

NOVELTY - An **apparatus** (I) for **electric** or **electrochemical** detection of molecular interactions between an **immobilized** probe and an **electrochemically** active reporter-labeled target molecule, comprises a supporting substrate (S), microelectrodes (M), polymeric hydrogel pads (P), a counter-**electrode**, a source for producing **electrical** signal, a detector (D) for detecting changes in the signal, and electrolyte solution.

DETAILED DESCRIPTION - An **apparatus** (I) for **electric** or **electrochemical** detection of molecular interactions between an **immobilized** probe and an **electrochemically** active reporter-labeled target molecule, comprises (S), a number of microelectrodes (M) in contact with (S), a number of polymeric hydrogel pads (P) in contact with (M) and to which probes are **immobilized**, at least one counter-**electrode** (CE) in contact with (S), a source for producing an **electrical** signal at each (M), a detector for detecting changes in the **electrical** signal at each (M), and an electrolyte solution (ES) in contact with (M) and (P), and CE, where molecular interactions between the **immobilized** probe and the **electrochemically** active reporter-labeled target **molecule** are **detected** by **detecting** changes in the **electrical** signal in the presence or absence of the **electrochemically** active reporter-labeled target molecule.

INDEPENDENT CLAIMS are also included for the following:

(1) an **apparatus** (II) for detecting single base extension of an oligonucleotide comprising an oligonucleotide array, where extension is effected by a polymerase and directed by a nucleotide sequence of a nucleic acid in a biological sample, comprising a first **electrode** comprising an array of oligonucleotides on a substrate, where the **electrode** comprises a conducting or semiconducting surface, a second counter **electrode** comprising a conducting metal in contact with an aqueous electrolyte solution, and a third reference **electrode** in contact with the aqueous electrolyte solution, where each of the **electrodes** is **electrically** connected to a voltage source, where the **apparatus** further comprises a reaction chamber containing a polymerase and a hybridization solution comprising an electrolyte, where each of the **electrodes** is in **electrochemical** contact, the solution further contains a number of primer extension units comprising chain-terminating nucleotide species, where each different chain-terminating nucleotide species is labeled with a distinguishable **electrochemical** label capable of participating in a redox reaction at the surface of the first **electrode** under conditions where an **electrical** potential is applied to the **electrodes**, where each of the labeled chain-terminating nucleotide species has a specific redox potential, where a current is produced in the **apparatus** when a biological sample comprising a nucleic acid that hybridizes to an oligonucleotide contained in the oligonucleotide array is incubated in the reaction chamber under moderate to high stringency hybridization conditions and the nucleotide sequence of the hybridized oligonucleotide is extended by the incorporation of at least one of the chain-terminating nucleotide and a voltage is applied to the **electrodes** at a potential specific for the redox potential of the **electrochemical** label; and

(2) an **apparatus** (III) for **electrical** detection of molecular interactions between an **immobilized** probe and a target molecule, comprising (S), a number of microelectrodes in contact with (S) to which probes are **immobilized**, CE in contact with (S), an AC/DC voltage source for producing **electrical** impedance at each (M), an **electrical** detector for detecting changes in impedance at each (M) in the presence or absence of a target molecule, and an electrolyte solution in contact with the number of microelectrodes and CE, where molecular interactions between the **immobilized** probe and the target **molecule** are **detected** by **detecting** changes in the **electrical** impedance in the presence and absence of the target molecule.

USE - The **apparatus** is useful for **detecting** interactions between biological **molecules**, such as nucleic acid hybridization between oligonucleotide probe molecules bound to defined regions of an ordered array and nucleic acid target molecules which are permitted to interact with probe molecules. The **apparatus** is also useful for detecting interactions between peptides. The **apparatus** is also useful for detecting single base extension of an oligonucleotide.

ADVANTAGE - The **apparatus** is simple, economical and efficient. The **apparatus** provides **electrical** detection without any additional requirement that the target molecule be labeled with a reporter molecule.

Dwg.0/15

L15 ANSWER 6 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD

ACCESSION NUMBER: 2001-432614 [46] WPIDS
DOC. NO. NON-CPI: N2001-320577
DOC. NO. CPI: C2001-130869
TITLE: Analyte detecting **device** for diagnosing liquid sample, has solid support with electrosensor and capture reagent, both **immobilized** and **electrodes** for binding analytes.
DERWENT CLASS: A89 B04 D16 J04 S03
INVENTOR(S): ZHANG, H
PATENT ASSIGNEE(S): (BIOT-N) BIOTRONIC TECHNOLOGIES INC
COUNTRY COUNT: 93
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001038873	A2	20010531	(200146)*	EN	74

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 2001012419 A 20010604 (200153)

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001038873	A2	WO 2000-US29748	20001027

AU 2001012419 A AU 2001-12419 20001027

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001012419 A	Based on	WO 200138873

PRIORITY APPLN. INFO: US 1999-167409P 19991124
AN 2001-432614 [46] WPIDS
AB WO 200138873 A UPAB: 20011129
NOVELTY - A solid support has **immobilized** electrosensor with working and reference **electrodes**. A capture reagent is **immobilized** on working **electrode** and reagent is capable of binding to an analyte. The **electrodes** are connected to read-out **device** through conductive leads for **electrochemical** measurements.

DETAILED DESCRIPTION - Capture reagent is selected from a group of cell, organic molecules and inorganic **molecule**. Working **electrode** is a **screen** printed carbon conductor and reference **electrode** is screen printed silver. INDEPENDENT CLAIMS are also included for the following:

(a) Analyte assaying method in liquid sample;
(b) **Electrochemical** preparing method;
(c) Kit for detecting analyte in liquid sample

USE - Analyte detecting **device** e.g. electroimmunosensor used to determine analyte in liquid sample such as human fluids e.g. blood, serum for diagnosis.

ADVANTAGE - The ability to measure untreated samples in presence of possible interfering substance is an advantage of assay. Also the simplicity and sensitivity is associated with **electrochemical** detection. The quantitative assays can be performed by unskilled personnel requiring no more steps than adding sample solution or detection reagent. No lengthy incubation and sample separation are needed and whole assay can be performed within minutes.

DESCRIPTION OF DRAWING(S) - The figure show the top views of electroimmunosensor, and base sensor used in electroimmunosensor.
1A, 1B/12

L15 ANSWER 7 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:447233 BIOSIS
DOCUMENT NUMBER: PREV200100447233
TITLE: Disposable amperometric glucose sensor **electrode** with enzyme-**immobilized** nitrocellulose strip.
AUTHOR(S): Cui, Gang; Yoo, Jae Hyun; Woo, Byung Wook; Kim, Soon Shin; Cha, Geun Sig; Nam, Hakhyun (1)
CORPORATE SOURCE: (1) Department of Chemistry, Chemical Sensor Research Group, Kwangwoon University, 447-1 Wolgye-Dong, Nowon-Ku, Seoul, 139-701: namh@daisy.gwu.ac.kr South Korea
SOURCE: Talanta, (6 July, 2001) Vol. 54, No. 6, pp. 1105-1111. print.
ISSN: 0039-9140.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB **Electrochemical** properties of screen-printed carbon paste **electrodes** (CPEs) with a glucose oxidase-**immobilized** and hexamineruthenium (III) chloride ((Ru(NH3)6)3+) containing nitrocellulose (NC) strip were examined. The NC strip (2X8 mm) placed on the CPEs printed on polyester (PE) film is tightly sealed using another PE film on the top with open edges on both sides. Samples containing macromolecules and particles (e.g. proteins and blood cells) are applied at one edge of the NC strip and reach the **detection** area, chromatographically separating small **molecules** (e.g. glucose, ascorbate, acetaminophen, and uric acid) of analytical interests. Since sample volumes and the amount of catalytic reagents (mediator and glucose oxidase) are precisely predefined by the dimension and pore size (8 mum) of the NC strip, the sensor-to-sensor reproducibility and accuracy of analysis are greatly improved. The use of (Ru(NH3)6)3+ mediator, which exhibits characteristic substantially lowers the applied potential (0.0 V vs Ag/AgCl) for glucose determination and eliminates the interference from other oxidizable species, providing improved analytical results.

L15 ANSWER 8 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
DUPLICATE 1

ACCESSION NUMBER: 2001:145778 BIOSIS
DOCUMENT NUMBER: PREV200100145778
TITLE: **Electrochemical** DNA biosensor for environmental monitoring.
AUTHOR(S): Chiti, Giacomo; Marrazza, Giovanna; Mascini, Marco (1)
CORPORATE SOURCE: (1) Dipartimento di Sanita Pubblica, Epidemiologia, Chimica Analitica Ambientale, Sez. Chimica Analitica, Via G. Capponi, 9, 50121, Firenze: mascini@cesit1.unifi.it, www.igiene.unifi.it/chimica/sensori Italy
SOURCE: Analytica Chimica Acta, (26 January, 2001) Vol. 427, No. 2, pp. 155-164. print.
ISSN: 0003-2670.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English

AB A disposable **electrochemical** DNA biosensor for the determination of toxic aromatic amines has been developed. The **device** relies on the intercalative or electrostatic collection of aromatic amines onto an **immobilized** dsDNA or ssDNA layer (obtained from several sources), followed by a chronopotentiometric analysis. The anodic signal of the guanine bases of DNA coated screen printed **electrodes** (SPEs) is strongly influenced by structural or conformational modifications of the DNA layer accrued from DNA-analyte association. So the variation in the oxidative signal of guanine is taken as an index of the molecular recognition. When the analyte is electroactive, its oxidation peak gives an additional information; in fact interesting correlation have been found between the amount of analyte trapped on the **electrode** and the guanine peak variation.
Submicromolar **detection** limits have been obtained for **molecules** with more than two aromatic rings after a 2 min accumulation. The biosensor has also been tested on wastewater real samples; the comparison with results of classical genotoxicity tests has confirmed the applicability of the method for real samples.

L15 ANSWER 9 OF 22 JICST-EPlus COPYRIGHT 2002 JST
ACCESSION NUMBER: 1020047874 JICST-EPlus
TITLE: Characterization of indicators for **electrochemical** DNA detection with PCR.
AUTHOR: OMURA MIYUKI; KOBAYASHI MASAAKI; KUSAKAWA TAKASHI; MORITA YASUTAKA; MURAKAMI YUJI; YOKOYAMA KENJI; TAMIYA EIICHI
CORPORATE SOURCE: Japan Advanced Inst. Sci. and Technol., Hokuriku
SOURCE: Nippon Kagakkai Baiotekunoroji Bukai Shinpojiumu Koen Yoshishu, (2001) vol. 5th, pp. 19. Journal Code: L3054A
PUB. COUNTRY: Japan
LANGUAGE: Japanese
STATUS: New
AB Recently, microfabricated **devices** for gene detection are gathering much attention both in clinical and food areas with their fast analysis time, reduced amount of sample and reagents consumption, and high efficiency. We are focusing in developing **electrochemical** detection methods with enhanced their portability. Conventional **electrochemical** methods for gene **detection** employ **electrochemically** active moieties or **molecules** concentrated on a **detection electrode immobilized** with probe DNA. We have developed a novel **electrochemical** method to detect PCR amplification without probe **immobilization**. Amplified DNAs entrapped **electrochemical** indicators resulting in suppressed amperometric response. The indicator should have both **electrochemical** activity and specific affinity to double stranded DNA. Bisbenzimide is the main example, but it has irreversible a redox feature it adsorbs onto the **electrode** and acts as an inhibitor to PCR. In this research, bisbenzimide was **electrochemically** characterized to clarify the mechanism of the response. Many chemicals were also researched to investigate their ability as indicators. (author abst.)

L15 ANSWER 10 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:186560 BIOSIS
DOCUMENT NUMBER: PREV200100186560
TITLE: Detection of analytes using electrochemistry.
AUTHOR(S): Van Es, Remco Mari (1)
CORPORATE SOURCE: (1) Giessenburg Netherlands
ASSIGNEE: DSM N.V., Te Heerlen, Netherlands
PATENT INFORMATION: US 6100045 August 08, 2000
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (Aug. 8, 2000) Vol. 1237, No. 2, pp. No Pagination. e-file.
ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
AB The present invention relates to diagnostic assays whereby the detection means is based on **electrochemical** reactions. This means that the label to be detected provides an **electric** signal. Preferred labels are enzymes giving such a signal. Provided is a flow cell whereby a solid phase is provided in a flow stream of the sample, in close proximity to a working **electrode** to detect any **electrical** signal. In a typical embodiment, a sample is mixed with molecule having specific

binding affinity for an analyte of which the presence in the sample is to be **detected**, whereby said specific binding **molecule** is provided with a label. The conjugate of labelled specific binding molecule and analyte is then **immobilized** on the solid phase in the vicinity of the working **electrode** , the flow cell is rinsed with a solution and afterwards a substrate solution for the label (an enzyme) is provided upon which an **electrical** signal is generated and can be detected by the working **electrode**. The methods and **devices** of the present invention are particular useful for liquids which comprise many substances that may disturb measurement in conventional assays. The design of the flow cell allows for removal of said interfering substances before measurement. In a preferred embodiment at least part of the solid phase is provided in the form of magnetic beads. In this embodiment the solid phase can be mixed with the sample thereby creating a longer reaction time, a better sensitivity and a higher speed of the assay.

L15 ANSWER 11 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-024875 [03] WPIDS
DOC. NO. CPI: C2001-007589
TITLE: Monitoring/**detecting** small **molecule-biomolecule** interactions for drug **screening** involves contacting a solution of small molecules with **immobilized** biomolecules and measuring the frequency generated with an acoustic wave **device**.
DERWENT CLASS: B04 D16 J04
INVENTOR(S): MCGOVERN, M; THOMPSON, M
PATENT ASSIGNEE(S): (SENS-N) SENSORCHEM INT CORP
COUNTRY COUNT: 86
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000068419	A2	20001116	(200103)*	EN	44
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW					
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW					
CA 2271179	A1	20001105	(200104)	EN	
AU 2000043880	A	20001121	(200112)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000068419	A2	WO 2000-CA504	20000505
CA 2271179	A1	CA 1999-2271179	19990505
AU 2000043880	A	AU 2000-43880	20000505

FILING DETAILS:

PATENT NO	KIND	PATENT NO

AU 2000043880 A Based on WO 200068419

PRIORITY APPLN. INFO: CA 1999-2271179 19990505
AN 2001-024875 [03] WPIDS
AB WO 200068419 A UPAB: 20010116
NOVELTY - Monitoring small molecule-biomolecule interactions comprising binding a biomolecule to a substrate, contacting the biomolecule with a liquid, inducing shear oscillation of the substrate, measuring the oscillation frequency of an acoustic wave **device**, introducing a small molecule into the liquid, measuring the oscillation frequency of the acoustic wave **device**, and comparing the frequencies, is new.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an **apparatus** for monitoring small molecule-biomolecule interactions comprising:

(a) an oscillating substrate;

(b) a wet surface attached to the substrate for contact with a liquid and for binding with a biomolecule;

(c) a dry surface attached to the substrate; and

(d) a detection **apparatus** for determining the resonance frequency of the substrate.

USE - The method and **apparatus** are useful for qualitative and quantitative analysis of biomolecule interactions using viscosity measurements. Particularly, the method and **apparatus** are useful for detecting and monitoring the interaction of small molecules and biomolecules such as polynucleotides or polypeptides, which is especially useful in screening of drug candidates for activity or binding affinity with certain target **molecules**. These are useful for **detecting**, quantifying and monitoring the chemical and biochemical reactivity, and properties of small molecules. In addition, the method and **apparatus** are useful for **determining** under what conditions a small **molecule** will not bind to a given biomolecule, obtaining information regarding changes in tertiary structure of biomolecules, measuring affinity, potency, specificity, on/off (complexing/separating) rates, and other pharmacokinetic and metabolic studies.

ADVANTAGE - A prior method for detecting polynucleotide hybridization using a piezoelectric crystal (US5595908) requires washing and drying steps that are expensive and time consuming. Furthermore, prior methods do not include, or are completely ineffective in, monitoring the binding of small molecules to biomolecules. The present method provides an improved means of **detecting** and monitoring small **molecules**. Its use of inert gas permits free oscillation of the piezoelectric substrate, and maintains an inert environment, of controlled humidity (preferably dry) in contact with the bottom surface and bottom **electrode** of the **device** for increased reliability of results. In addition, the present **apparatus** may be used in conjunction with multiple samples of small molecules passing into the flow cell to evaluate their affinities for the biomolecule **immobilized** onto the acoustic wave **device**.

DESCRIPTION OF DRAWING(S) - The figure shows a diagrammatic view of a biosensor mounted in a flow cell.
Substrate 10
Top **electrode** 12
Bottom **electrode** 14

Biomolecules 16
Biosensor 20
Flow cell 22
Outer housing 24
Cell 26
Upper chamber 28
Lower chamber 30
Seal 32
Liquid inlet 34
Liquid outlet 36
Gas inlet 38
Gas outlet 40
Electrical connections 42
Electrical connections 44
Wet surface 46
Dry surface 48.
Dwg.4/9

L15 ANSWER 12 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000-647249 [62] WPIDS
DOC. NO. NON-CPI: N2000-479670
DOC. NO. CPI: C2000-195805
TITLE: **Apparatus** for monitoring many different molecular interactions, such as immunoglobulin/antigen interaction and DNA hybridization, comprises a reaction chamber and a fluid inflow channel communicating with the reaction chamber.
DERWENT CLASS: A89 B04 D16 J04 S03
INVENTOR(S): GIRAULT, H H; REYMOND, F; ROSSIER, J S
PATENT ASSIGNEE(S): (ECOL-N) ECOLE POLYTECHNIQUE FEDERALE LAUSANNE
COUNTRY COUNT: 93
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000058724	A1	20001005	(200062)*	EN	45
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
AU 2000042927	A	20001016	(200106)		
EP 1166103	A1	20020102	(200209)	EN	
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE					

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2000058724	A1	WO 2000-EP2887	20000328
AU 2000042927	A	AU 2000-42927	20000328
EP 1166103	A1	EP 2000-922589	20000328
		WO 2000-EP2887	20000328

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2000042927	A	Based on	WO 200058724
EP 1166103	A1	Based on	WO 200058724

PRIORITY APPLN. INFO: GB 1999-7249 19990329
AN 2000-647249 [62] WPIDS
AB WO 200058724 A UPAB: 20001130
NOVELTY - **Apparatus** for performing chemical assays involving aqueous fluids, is new.

The **apparatus** comprises at least one reaction chamber and at least one fluid inflow channel communicating with the reaction chamber and a gate means adapted to prevent passage of aqueous fluid through the fluid inflow channel(s) into the reaction chamber(s).

DETAILED DESCRIPTION - **Apparatus** for performing chemical assays involving aqueous fluids, is new.

The **apparatus** comprises at least one reaction chamber and at least one fluid inflow channel communicating with the reaction chamber and a gate means adapted to prevent passage of aqueous fluid through the fluid inflow channel(s) into the reaction chamber(s), until such fluid is acted upon by a fluid entry force, where the gate means comprises at least a portion of the fluid inflow channel having a hydrophobic inner surface.

An INDEPENDENT CLAIMS are also included for a method (M1) of manufacturing the above **apparatus**, comprising the following steps which may be performed in either order or simultaneously:

(a) forming at least one reaction chamber; and

(b) forming at least one fluid inflow channel communicating with the reaction chamber(s), where at least a portion of the fluid inflow channel(s) has a hydrophobic inner surface adapted to act as gate means.

USE - The **apparatus** is applicable to the monitoring of many different molecular interactions, in particular molecular recognition between an **immobilized** affinity partner and a species in solution, such as immunoglobulin/antigen interaction, DNA hybridization, haptamer-protein interaction, drug and virus **detection**, high throughput **screening** of synthetic **molecules** and for **determining** the concentration and reaction kinetics of target species.

ADVANTAGE - Simultaneous filling is ensured by using a common source of fluid entry force for all the microchannels. The degree of fluid entry force may also be readily controlled.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic cross section of the **apparatus** after deposition of an aqueous sample drop of the hydrophobic gate (Part A) and after sample loading (Part B).

Dwg.1/12

L15 ANSWER 13 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000-611370 [58] WPIDS
DOC. NO. NON-CPI: N2000-452769
DOC. NO. CPI: C2000-182878
TITLE: Diagnostic card **device** for detecting and quantitating an analyte in liquid sample, has biosensor having surface bound molecules of charged

coil-forming peptides capable of binding with oppositely charged peptides.

DERWENT CLASS: B04 D16 J03 J04 S03
INVENTOR(S): CHAO, H; MCELROY, J; SEGAL, D; WONG, W Y
PATENT ASSIGNEE(S): (HELI-N) HELIX BIOPHARMA CORP
COUNTRY COUNT: 90
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2000052457	A1	20000908	(200058)*	EN	80
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW					
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW					
AU 2000056468	A	20000921	(200065)		
US 6300141	B1	20011009	(200162)		

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
WO 2000052457	A1		WO 2000-CA206	20000302
AU 2000056468	A		AU 2000-56468	20000302
US 6300141	B1	Provisional	US 1999-122546P	19990302
			US 2000-518178	20000302

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 2000056468	A	Based on	WO 200052457

PRIORITY APPLN. INFO: US 1999-122546P 19990302; US 2000-518178 20000302

AN 2000-611370 [58] WPIDS

AB WO 200052457 A UPAB: 20001114
NOVELTY - The **device** has card substrate (20) having a sample introduction region (12), a biosensor (32) and sample-flow pathway (38). The biosensor has surface bound molecules of charged coil-forming peptides on its detection surface, capable of producing coiled coil heterodimer on binding with oppositely charged coil-forming peptides.

DETAILED DESCRIPTION - A sample introduction region (12), biosensors (32) are formed on a card substrate (20) and are connected through sample flow pathway (38). The analyte dependent **electrical** signal from the biosensor are fed to signal responsive element for storing the signals by the circuitry. The biosensor has a **detection** surface with charged surface bound **molecules** of coil-forming peptides capable of producing stable alpha helical coiled coil heterodimer on interaction with oppositely charged coil-forming peptide. The biosensor generates signal which can be measurably altered while binding the peptides. The sample flow pathway accommodates a conjugate of oppositely charged coil-forming peptide and the analyte or its analog in a releasable form into a sample liquid and an

analyte binding agent. The sample-introduction region is adapted to be carried through the sample-flow pathway, where the analyte mixes with conjugate and reacts with the binding agent under conditions effective for **immobilizing** analyte and the bound conjugate.

An INDEPENDENT CLAIM is also included for a diagnosing system that includes a card **device** and a card reader. The card reader has a slot for introducing the card. The analyte dependent signals from the biosensor is read by the reader through the contact leads. A signal responsive element displays or records the read signal.

USE - The diagnostic card **device** is useful for detecting the presence or amount of an analyte present in a liquid sample which forms an analyte binding agent, an analyte-analyte binding agent pair selected from antigen-antibody, hormone-receptor, drug-receptor, cell-surface antigen-lectin, biotin-avidin, and complementary nucleic acid strands (claimed).

DESCRIPTION OF DRAWING(S) - The figure shows the diagnostic card **device**.

Sample introduction region 12
Card substrate 20
Microprocessor 28
Biosensor 32
Analog to digital converter 35
Voltage modulator 36
Sample-flow pathway 38

Dwg.2/55

L15 ANSWER 14 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-157960 [16] WPIDS
CROSS REFERENCE: 1994-208615 [25]
DOC. NO. NON-CPI: N2001-114976
DOC. NO. CPI: C2001-046800
TITLE: **Apparatus** for producing electrogenerated chemiluminescence for chemical analysis includes an **electrode** coated with **immobilized** layer of a compound capable of generating electro chemiluminescence.
DERWENT CLASS: E12 E23 L03 S03
INVENTOR(S): BARD, A J; ZHANG, X
PATENT ASSIGNEE(S): (TEXA) UNIV TEXAS SYSTEM
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 6132648	A	20001017	(200116)*		14

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
US 6132648	A	Cont of	US 1989-416241	19891002
		Cont of	US 1992-835049	19920211
		Cont of	US 1994-267286	19940628
		Cont of	US 1995-417726	19950406
			US 1995-479544	19950607

FILING DETAILS:

PATENT NO	KIND		PATENT NO
US 6132648	A	Cont of	US 5324457

PRIORITY APPLN. INFO: US 1989-416241 19891002; US 1992-835049 19920211; US 1994-267286 19940628; US 1995-417726 19950406; US 1995-479544 19950607

AN 2001-157960 [16] WPIDS
CR 1994-208615 [25]
AB US 6132648 A UPAB: 20010323

NOVELTY - An **apparatus** for producing electrogenerated chemiluminescence comprises **electrode** (I) (22) having an **immobilized** layer (24) of molecule capable of generating electro chemiluminescence, on the surface, and an **electrode** (II) (26). The **immobilized** layer comprises a non-polymeric layer of molecules similarly aligned or oriented in relation to the surface of the **electrode**, and has a surfactant portion.

DETAILED DESCRIPTION - An **apparatus** for producing electrogenerated chemiluminescence comprises **electrode** (I) attached to a solid member having an **immobilized** layer of molecule capable of generating electro chemiluminescence on the surface, and an **electrode** (II) attached to solid member. The **immobilized** layer comprises a non-polymeric layer of molecules similarly aligned or oriented in relation to the surface of the **electrode** and has a surfactant portion. The molecules electrochemiluminescence when the voltage is impressed across the two **electrodes** which are exposed to an electrolyte solution. An INDEPENDENT CLAIM is also included for a method for producing electrochemiluminescence by immersing **electrode** (I) having **immobilized** layer of molecules, and **electrode** (II) in an electrolyte solution and impressing a voltage between the **electrodes** to cause the molecules to electrochemiluminescence, due to interaction of **electrode** (I) and electrolyte solvent with the involvement of molecules.

USE - For producing electrogenerated chemiluminescence. The **device** is used for study of electron transfer and energy transfer processes at electrified interfaces for e.g. quenching of excited states with various **electrode** materials under controlled potential. The **device** is also used for high sensitive chemical analysis such as for detecting oxalate present in urine and blood samples, and for detection of tertiary amines and amino acids in solution. The **device** is also useful for high sensitive detection of labelled compounds.

ADVANTAGE - The **immobilized** layer is strongly affixed to the **electrode** and does not get washed out in various types of electrolyte solution. The **device** has high sensitivity even with smaller amount of luminescor concentrated on the **electrode** surface. The **electrode** is compatible with both aqueous and non-aqueous media. Analysis of various low concentrated solution are also possible using the **apparatus**.

DESCRIPTION OF DRAWING(S) - The figure shows schematic diagram of electrochemiluminescence cell.

Electrodes 22,26

Immobilized layer 24

Dwg.1/11

L15 ANSWER 15 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2000-673582 [66] WPIDS
DOC. NO. NON-CPI: N2000-499292
DOC. NO. CPI: C2000-204283
TITLE: Versatile **electrochemical** detector array for laboratory application comprises e.g. computer-addressable noble metal ultra-micro **electrodes** on silicon plate for molecular assay and investigation of charged molecule transport.
DERWENT CLASS: B04 D16 J04 L03 S03 U12 U14
INVENTOR(S): ALBERS, J; BERNT, H; DEHORST, R; HINTSCHE, R; SEITZ, R; BREDEHORST, R
PATENT ASSIGNEE(S): (FRAU) FRAUNHOFER GES FOERDERUNG ANGEWANDTEN
COUNTRY COUNT: 20
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
DE 19916921	A1	20001019	(200066)*		23
WO 2000062047	A1	20001019	(200066)	GE	
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: JP US					
WO 2000062048	A2	20001019	(200066)	GE	
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE					
W: DE JP US					
DE 10080029	T	20010913	(200153)#		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
DE 19916921	A1	DE 1999-19916921	19990414
WO 2000062047	A1	WO 1999-EP4883	19990712
WO 2000062048	A2	WO 2000-EP3404	20000414
DE 10080029	T	DE 2000-10080029	20000414
		WO 2000-EP3404	20000414

FILING DETAILS:

PATENT NO	KIND		PATENT NO
DE 10080029	T	Based on	WO 200062048

PRIORITY APPLN. INFO: DE 1999-19916921 19990414; DE 2000-10080029 20000414
AN 2000-673582 [66] WPIDS
AB DE 19916921 A UPAB: 20001219
NOVELTY - A versatile **electrochemical** detector array comprising computer-addressable noble metal ultra-microelectrodes (**electrodes**) on a silicon plate, is new. Sensor locations on plates comprise spaced arrays of ultra-microelectrodes and optionally-arranged auxiliary **electrodes**.
DETAILED DESCRIPTION - A versatile **electrochemical** detector array comprising computer-addressable noble metal ultra-micro **electrodes** on a silicon plate, is new. Sensor

locations on plates comprise spaced arrays of ultra-microelectrodes (**electrodes**) and optionally-arranged auxiliary **electrodes**.

Each position is addressable and **electrochemically** monitored. As required, alternating or steady **electrical** fields are produced at each. Individual detection of diverse **electrochemical** reactions or characteristics, or **electrical** read-out of such prior events, takes place at each sensor location. Differing or similar molecules forming an affinity, are **immobilized** as required at sensor positions, or on particular carriers, or in gels at the sensor locations, independently of optical characteristics.

USE - The ultra-microsensor **electrode** array on e.g. silicon plates has numerous potential applications in the laboratory, such as for **detection** of various **molecules** and mixtures in biochemical analysis, medicinal diagnosis and environmental monitoring.

ADVANTAGE - The array is especially suitable for biochemical affinity assays and is readily constructed using modern semiconductor processing technology. Different analytes can be determined simultaneously. Serial readout is achieved, avoiding interference with the measurement process, using a method particularly compatible with computer technology. Miniaturization, manufacturing and handling advantages are realized. Analytic handling of molecular biological assays is improved. Optical techniques are not invoked.

DESCRIPTION OF DRAWING(S) - The figure shows an **electrochemical** detector array in plan view.

carrier plate 1

contact surfaces 2

electronic addresser/decoder 10

Dwg.1a/1

L15 ANSWER 16 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.

ACCESSION NUMBER: 2000:466036 BIOSIS

DOCUMENT NUMBER: PREV200000466036

TITLE: Permselective behavior of an electrosynthesized, nonconducting thin film of poly(2-naphthol) and its application to enzyme **immobilization**.

AUTHOR(S): Ciriello, Rosanna (1); Cataldi, Tommaso R. I. (1); Centonze, Diego; Guerrieri, Antonio (1)

CORPORATE SOURCE: (1) Dipartimento di Chimica, Universita della Basilicata, Via N. Sauro 85, I-85100, Potenza Italy

SOURCE: Electroanalysis, (July, 2000) Vol. 12, No. 11, pp. 825-830. print.
ISSN: 1040-0397.

DOCUMENT TYPE: Article

LANGUAGE: English

SUMMARY LANGUAGE: English

AB The electrooxidation of 2-naphthol in phosphate buffer at pH 7 leads to the formation of a nonconducting polymer of poly(2-naphthol) on a platinum **electrode**. Such a resulting thin film displays an interesting permselective behavior, which proved useful in minimizing the interference of ascorbate, acetaminophen, cysteine, and urate sample **molecules**. **Electrochemical** **detection** in flowing streams was used to investigate the relevance of permselectivity for sensor development. Nonconducting poly(2-naphthol) film demonstrated useful also as a novel

permselective membrane for glucose oxidase **immobilization**. The glucose response time, t0.95, evaluated in batch addition experiments, was lower than 4 s. The calibration plot was linear up to 15 mM of glucose with a sensitivity of 2.2 nA/mM.

L15 ANSWER 17 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1998-568235 [48] WPIDS
DOC. NO. NON-CPI: N1998-442116
DOC. NO. CPI: C1998-170704
TITLE: **Electrochemical** detection of immunoactive macromolecules in test solutions - using an immunosensor comprising a electroconductive polymer membrane modified with specific receptors.
DERWENT CLASS: B04 D16 J04 S03
INVENTOR(S): BIRYUKOV, Y S; CHERKASOV, V R; FARMAKOVSKI, D A; KOMAROV, B V; MILANOVSKI, Y Y
PATENT ASSIGNEE(S): (FARM-I) FARMAKOVSKII D A; (BIOS-N) BIOSENSOR TECHNOLOGY LTD; (CROS-I) CROSS R E B
COUNTRY COUNT: 81
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9837409	A1	19980827	(199848)*	EN	64
RW: AT BE CH DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW					
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW					
RU 2107296	C1	19980320	(199848)		
AU 9863005	A	19980909	(199905)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9837409	A1	WO 1998-GB548	19980220
RU 2107296	C1	RU 1997-102274	19970220
AU 9863005	A	AU 1998-63005	19980220

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9863005	A	Based on	WO 9837409

PRIORITY APPLN. INFO: RU 1997-102274 19970220
AN 1998-568235 [48] WPIDS
AB WO 9837409 A UPAB: 19981203
The following are claimed: (A) **electrochemical** detection of immunoactive macromolecules in test solutions, comprising: (a) producing an immunosensor comprising a specific-receptor-modified membrane; (b) forming an **electrochemical** measuring cell from the immuno-sensitive sensor and a reference **electrode** linked by a measuring instrument; (c) placing the cell into the working solution; and (d) determining the displacement of the isoelectric point of the membrane in relation to the concentration

of macromolecules in the solution under test, by measuring the cell potential with step-wise changes in the ionic strength of the working solution. The membrane comprises an electroconductive polymer which is formed by **electrochemical** synthesis from a monomer solution containing specific receptors on the surface of the potentiometric **electrode**. To determine the isoelectric point displacement of the membrane, a test solution (with an ionic strength greater than that of the working solution at constant pH) is added to the working solution. (B) **electrochemical** detection of immunoactive macromolecules in a sample, comprising: (a) preparing a sensing **electrode** which has an electroconductive polymer coating, with receptors (which are specific to a desired macromolecule to be detected in the sample) **immobilised** in the coating; (b) treating the sensing **electrode** by immersion in a test solution containing the sample, so that the desired macromolecules bind to the specific receptors; (c) monitoring the **electric** potential difference between the treated sensing **electrode** and a reference **electrode** when immersed in an electrolyte; and (d) determining the change in the **electric** potential difference resulting from a change in ionic strength of the electrolyte at constant pH. (C) producing a sensor (comprising an **electrically** conductive **electrode** coated with an electroconductive polymer, with a desired biomaterial **immobilised** in the polymer) for **electrochemical** detection of biological material, comprising: (a) preparing an isotonic solution containing (i) a monomer of the polymer used to form the coating and (ii) the biomaterial to be **immobilised** ; (b) immersing the **electrode** to be coated in the isotonic solution; and (c) applying a cyclic **electric** potential between the **electrode** and the solution, to coat the **electrode** by **electrochemical** synthesis of the polymer from the solution. The cyclic **electric** potential is applied for at least one full cycle and has a peak value applied to the **electrode** which is less than +2 volts. (D) **apparatus** for **electrochemical detection** of immunoactive **molecules** in a sample, comprising: (a) a sensing **electrode** which has an electroconductive polymer coating (in which receptors, which are specific to a macromolecule to be detected in the sample, are **immobilised**); (b) means arranged to treat the sensing **electrode** by immersion in a test solution (containing the sample), so that the desired macromolecules bind to the specific receptors; (c) means arranged to monitor the **electric** potential difference between the treated sensing **electrode** and a reference **electrode** when immersed in an electrolyte; (d) means arranged to change the ionic strength of the electrolyte (in which the sensing and reference **electrodes** are immersed) while maintaining the pH constant; and (e) means to determine the change in the monitored potential difference resulting from the change in ionic strength.

USE- The processes/**apparatus** may be used for analysis of biological fluids (e.g. blood serum, lymph, urine or saliva) in medicine, pharmacology, biotechnology, ecology or agriculture.

ADVANTAGE- The processes are simpler and cheaper than prior art processes. They require less time to carry out, and exhibit greater sensitivity and reliability.

Dwg.1/7

L15 ANSWER 18 OF 22 MEDLINE DUPLICATE 2
ACCESSION NUMBER: 97222599 MEDLINE
DOCUMENT NUMBER: 97222599 PubMed ID: 9115689
TITLE: Towards amperometric immunosensor **devices**.
AUTHOR: Tiefenauer L X; Kossek S; Padeste C; Thiebaud P
CORPORATE SOURCE: Paul Scherrer Institut, Micro- and Nanostructures Laboratory, Villigen, Switzerland.. tiefenauer@psi.ch
SOURCE: BIOSENSORS AND BIOELECTRONICS, (1997) 12 (3) 213-23. Journal code: AKA; 9001289. ISSN: 0956-5663.
PUB. COUNTRY: ENGLAND: United Kingdom
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 19970506
Last Updated on STN: 19990129
Entered Medline: 19970421

AB In contrast to optical immunosensors, the **electrochemical** detection of an immunanalytical reaction does require a labeling, but allows an easier discrimination of specific and non-specific binding. We present a concept and first results for a multivalent amperometric immunosensor system which is based on silicon technology. The capture molecule streptavidin, covalently **immobilized** on silica, allows the **immobilization** of biotinylated antigens at a defined density. A nanostructured gold **electrode** serving as a stable network of nanowires is expected to be beneficial for the **electrochemical detection** of bound ferrocene-labeled antibody **molecules**. The results presented focus on site-specific **immobilization** of streptavidin on silica and reduction of non-specific binding of proteins.

L15 ANSWER 19 OF 22 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 1998:87839 BIOSIS
DOCUMENT NUMBER: PREV199800087839
TITLE: Competitive nonseparation **electrochemical** enzyme binding/immunoassay (NEEIA) for small **molecule detection**.
AUTHOR(S): Ducey, Michael W., Jr.; Smith, Aaron M.; Guo, Xuan; Meyerhoff, Mark E. (1)
CORPORATE SOURCE: (1) Univ. Mich., Dep. Chem., Ann Arbor, MI 48109 USA
SOURCE: Analytica Chimica Acta, (Dec. 30, 1997) Vol. 357, No. 1-2, pp. 5-12.
ISSN: 0003-2670.
DOCUMENT TYPE: Article
LANGUAGE: English

AB A nonseparation **electrochemical** enzyme binding/immunoassay (NEEIA) for the **detection** of small **molecules** via a competitive format is described. The NEEIA concept is based on the use of a microporous gold **electrode**, which serves as both the working **electrode**, and solid phase for the **immobilization** of binding protein/antibody through a chemisorbed layer of thioctic acid. Competitive assays are performed by incubating the small molecule of interest and an alkaline phosphatase (ALP) labeled analyte competitor (conjugate) with the modified **electrode**. Surface bound conjugate is spatially resolved from unbound conjugate by introducing the substrate

(p-aminophenyl phosphate) through the backside of the microporous gold **electrode**. The substrate diffuses rapidly through the microporous -old **electrode** where it first encounters surface bound conjugate. The enzymatically generated product (p-aminophenol) is subsequently oxidized at the **electrode** (+ 190 mV vs. Ag/AgCl). Due to the competitive nature of the assay, the magnitude of the amperometric signal is inversely proportional to the concentration of analyte in the sample. Detection of biotin, digoxin and digoxin in buffer is demonstrated with detection limits of 1, 0.1 and 10 nM, respectively. In addition, it is shown that digoxin can be measured in undiluted sheep serum with a detection limit of 1 nM, demonstrating that the proposed competitive NEEIA format can be employed for the **detection** of small **molecules** directly in complex matrices without any discrete separation or washing steps.

L15 ANSWER 20 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1994-042806 [05] WPIDS
CROSS REFERENCE: 1991-132996 [18]
DOC. NO. NON-CPI: N1994-033901
DOC. NO. CPI: C1994-019175
TITLE: **Device** for detecting organic molecular analytes in fluid - includes a test chamber having **electrodes** with binding means for analyte and signal generating mol..
DERWENT CLASS: B04 D16 J04 S03
INVENTOR(S): SCHRAMM, W
PATENT ASSIGNEE(S): (UNMI) UNIV MICHIGAN
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 5281539	A	19940125	(199405)*		11

APPLICATION DETAILS:

PATENT NO	KIND		APPLICATION	DATE
US 5281539	A	CIP of	US 1989-416160	19891002
			US 1991-676767	19910327

PRIORITY APPLN. INFO: US 1989-416160 19891002; US 1991-676767 19910327
AN 1994-042806 [05] WPIDS
CR 1991-132996 [18]
AB US 5281539 A UPAB: 19940315
Molecular analytes in a fluid (40) are detected by flowing the fluid through a **device** (10) having a chamber which is sepd. from the flowing steam (40) by a membrane (48) which allows the analytes to continuously pass into and out of the chamber while retaining molecular conjugates of the analyte within the chamber. The chamber contains spaced **electrodes** (44,46), the first of which (44) has a first binding means, having a first effective affinity for reversibly binding the analyte to be detected, **immobilised** thereon, and a molecular conjugate of the analyte with a signal generating **mol**. that generates a

detectable signal reversibly bound to the first binding means, such that analyte in the fluid flowing into and out of the chamber is reversibly bound to the first binding means by competitive displacement of the molecular conjugate which is conducted to the second **electrode** where it is bound to a second binding means having a second effective affinity for reversibly binding to the molecular conjugate. The signal generating **mol.** generates a continuous **detectable** signal distinguishing binding at the first or second binding means for at least 24 hrs. to continuously indicate the change of analyte concn. in the flow of fluid. The signal generating mol. consists of an enzyme capable of catalysing a conversion of an enzyme substrate in the fluid into a molecule which can be measured **electrochemically** by the **electrodes.**

USE/ADVANTAGE - Used in detecting organic molecular analytes in fluids, such as hormones, drugs or other biologically active substances in fluids, partic. progesterone, testosterone and benzoylecgonine in body fluids. Allows the continuous monitoring of analytes in a fluid in the submicrogram range with a specificity comparable to a radioimmunoassay.

Dwg.7/9

L15 ANSWER 21 OF 22 JAPIO COPYRIGHT 2002 JPO

ACCESSION NUMBER: 1993-098484 JAPIO
TITLE: MOLECULE PATTERNING **DEVICE**
INVENTOR: MASUDA SENICHI; WASHIZU MASAO; SUZUKI SEIICHI; KUROSAWA OSAMU
PATENT ASSIGNEE(S): ADVANCE CO LTD, JP (CO 470031)
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 05098484	A	19930420	Heisei	(5) C25B007-00

JP
APPLICATION INFORMATION
ST19N FORMAT: JP1991-284197 19911004
ORIGINAL: JP03284197 Heisei
SOURCE: PATENT ABSTRACTS OF JAPAN, Unexamined Applications, Section: C, Sect. No. 1098, Vol. 17, No. 446, P. 25 (19930817)

AN 1993-098484 JAPIO

AB PURPOSE: To draw a **molecule** pattern **determined** by the pattern of an **electric** field on a substrate by attracting (or repelling) the molecule of protein, etc., in a soln. by an **electric** field and adsorbing the molecule on the substrate.

CONSTITUTION: A soln. 8 of the molecules of protein, etc., is introduced between a substrate 1 and a counter substrate 2, a voltage is impressed between the **electrodes** #1 and 3 and between the **electrodes** #2 and 4 through lead wires #1 and 5 and #2 and 6, and hence the protein molecule is collected between the **electrode** gap 7 in a strong **electric** field by electrophoresis. The molecule is adsorbed on the counter substrate 2, and a molecule pattern having the gap 7 shape is obtained on the counter substrate 2.

L15 ANSWER 22 OF 22 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD

ACCESSION NUMBER: 1988-287287 [41] WPIDS
DOC. NO. NON-CPI: N1988-217996
DOC. NO. CPI: C1988-127470
TITLE: **Device** for rapid qualitative or quantitative assay - has chrono-coulometric sequential measurement **device,** multiplexer, potentiostat and microcomputer.
DERWENT CLASS: B04 J04 S03
INVENTOR(S): RISHPON, J; ROSEN, I
PATENT ASSIGNEE(S): (UYRA-N) UNIV RAMOT APPL RES & IND DEV LTD
COUNTRY COUNT: 19
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
EP 286084	A	19881012	(198841)*	EN	17
R: AT BE CH DE ES FR GB GR IT LI LU NL SE					
AU 8814420	A	19881013	(198849)		
ZA 8802369	A	19881130	(198902)		
JP 01038646	A	19890208	(198912)		
US 5149629	A	19920922	(199241)		15
IL 82131	A	19930114	(199305)		
CA 1312650	C	19930112	(199308)		
EP 286084	B1	19940706	(199426)	EN	19
R: AT BE CH DE ES FR GB GR IT LI LU NL SE					
DE 3850515	G	19940811	(199431)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
EP 286084	A	EP 1988-105543	19880407
ZA 8802369	A	ZA 1988-2369	19880405
JP 01038646	A	JP 1988-86240	19880407
US 5149629	A	US 1988-177463	19880404
IL 82131	A	IL 1987-82131	19870407
CA 1312650	C	CA 1988-563191	19880331
EP 286084	B1	EP 1988-105543	19880407
DE 3850515	G	DE 1988-3850515	19880407
		EP 1988-105543	19880407

FILING DETAILS:

PATENT NO	KIND		PATENT NO
DE 3850515	G	Based on	EP 286084

PRIORITY APPLN. INFO: IL 1987-82131 19870407
AN 1988-287287 [41] WPIDS
AB EP 286084 A UPAB: 19930923
A **device** for the rapid qualitative or quantitative assay of entities having a biological activity by sequential detn. of samples by enzyme **electrodes** immersed in a common soln. in a vessel, has a chrono-coulometric sequential measurement **device** using multiplexer, a potentiostat and microcomputer and a reference **electrode** and a counter **electrode** in the vessel. A predetermined voltage is applied during each measurement, the measurement being that of the current passing

during the actual measurement and its evaluation to indicate the quantity of the measured moiety.

The biologically active **molecules** to be **determined** may be antibodies/antigens, hormones/receptors or nucleotides/nucleotide probes, one of such pairs being **immobilised** on the **electrode** surface, the entity being tagged with an enzyme adapted to provide a suitable signal in a coulometric measurement. The enzyme may be conjugated via a biotin-vidin linkage. A suitable enzyme is alkaline phosphatase and the substrate is p-aminophenyl phosphate.

USE/ADVANTAGE - The system makes possible a rapid assay of many samples with a high degree of accuracy. The system can be used for quantitative measurements of a high degree of sensitivity, with sensitivities in the pg/ml range. The system can also be used for screening procedures such as for the presence or absence of breast cancer and other malignancies.

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ABEQ US 5149629 A UPAB: 19930923

Appts. for rapid sequential qualitative or quantitative assay of biospecific binding pair samples comprises as many working **electrodes** (12-19) as samples and immersed in a common soln. in a vessel (11), a multiplexer (24) for making sequential coulometric measurements, and a potentiostat (23). A ref. (26) and a counter (27) **electrode** are located in the vessel and a set voltage is applied during each measurement of the **electric** charge passing.

Each working **electrode** comprises an **electrically** inert support carrying a member of carbon felt, C paper or C cloth to which one of the pair members is firmly bonded to bind the second member which is tagged by an enzyme or is coupled to a further biospecific member which is enzyme tagged.

ADVANTAGE - Provides a rapid convenient assay for a wide range of mols..

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ABEQ EP 286084 B UPAB: 19940817

A chrono-coulometric assay for the qualitative or quantitative **determination** of biologically active **molecules** selected from antibodies/antigens; hormones/receptors; nucleotides/nucleotide probes, characterized by the following steps: (A) one member of such a pair is **immobilized** on the surface of a plurality of **electrodes** (12-19), (B) each of the **electrodes** is inserted into a different sample suspected to contain the second member, which is the active **molecule** to be **determined**, (C) the bound active **molecule** is tagged with an enzyme adapted to provide a suitable signal in a coulometric measurement, (D) the **electrodes** are transferred to a common vessel (11), where the amount of enzyme on each one of the **electrodes** is determined by (1) applying a predetermined voltage (2) adding a substrate for the enzyme (3) switching, under computer control, from one **electrode** to the other, and (4) recording the response of each **electrode** by measuring and integrating the current signal.

Dwg.1/8

[redacted] CAPLUS, MEDLINE, BIOSIS, EMBASE, WPIDS, CONFSCI, SCISEARCH, [redacted] JAPIO' ENTERED AT 12:55:26 ON 12 FEB 2002)

L16 [redacted] 100 S CHOONG V?/AU

_Author (s)

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L17          236 S MARACAS G?/AU
L18          170 S NAGAHARA L?/AU
L19         3363 S SHI S?/AU
L20            0 S L16 AND L17 AND L18 AND L19
L21           35 S L16 AND (L17 OR L18 OR L19)
L22           15 S L17 AND (L18 OR L19)
L23            0 S L18 AND L19
L24         3819 S L16 OR L17 OR L18 OR L19
L25           13 S L24 AND L2
L[redacted]   40 S L21 OR L22 OR L25
[redacted]  DUPLICATES REMOVED)
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L27 ANSWER 1 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 1
ACCESSION NUMBER: 2001:618212 CAPLUS
DOCUMENT NUMBER: 135:177678
TITLE: Protein and peptide sensors using **electrical** detection methods
INVENTOR(S): Sawyer, Jaymie Robin; Li, Changming; **Choong, Vi-En; Maracas, George** ; Zhang, Peiming
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 53 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001061053	A2	20010823	WO 2001-US5476	20010220

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-506178 A2 20000217

AB The present invention provides an app. and methods for the **elec. detection** of **mol.** interactions between a probe mol. and a protein or peptide target mol., but without requiring the use of **electrochem.** or other reporters to obtain measurable signals. The methods can be used for **elec. detection** of **mol.** interactions between probe **mols.** bound to defined regions of an array and protein or peptide target mols. which are permitted to interact with the probe mols. Streptavidin-modified porous polyacrylamide hydrogel microelectrodes were prepd. Biotinylated polyclonal antibodies to Escherichia coli were immobilized on the microelectrodes and the sensor was used to detect E. coli.

L27 ANSWER 2 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 2
ACCESSION NUMBER: 2001:507955 CAPLUS

DOCUMENT NUMBER: 135:89500
TITLE: Three-dimensional network for **biomolecule detection**
INVENTOR(S): Li, Changming; **Shi, Song; Maracas, George; Choong, Vi-En**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001050131	A1	20010712	WO 2001-US421	20010105

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-479332 A1 20000106
AB The present invention provides an app. for **detecting mol.** interactions compatible with **elec.** and **electrochem.** detection means. More specifically, the invention provides a bioarray that is fabricated from a porous substrate plated with a conductive layer, more specifically, a porous substrate plated with metal, more specifically, a porous hydrogel media substrate plated with metal.
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 3 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 3
ACCESSION NUMBER: 2001:507895 CAPLUS
DOCUMENT NUMBER: 135:96159
TITLE: Metal-coating method for characterization and quality control of porous media for biochip fabrication
INVENTOR(S): Li, Changming; **Shi, Song; Maracas, George; Choong, Vi-En**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 11 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001049897	A2	20010712	WO 2001-US422	20010105

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2000-478727 A1 20000106

AB The hydrogel media for biochip fabrication is characterized for quality control by metal coating followed by examg. the porous structure. The metal is applied by electroless coating or electroplating, and is preferably Au, Ag, Ni, Al, or Cu. The porous structure is evaluated by SEM and related methods, for detg. the pore size distribution in polymeric hydrogel substrate. The process is suitable for polyacrylamide hydrogel as the porous medium.

L27 ANSWER 4 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 4

ACCESSION NUMBER: 2001:452915 CAPLUS
DOCUMENT NUMBER: 135:43086
TITLE: Column-and-row-addressable high-density biochip array
INVENTOR(S): **Shi, Song**; Zhang, Peiming; **Maracas, George**
PATENT ASSIGNEE(S): Motorola Inc., USA
SOURCE: PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001043870	A2	20010621	WO 2000-US34222	20001214

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-464500 A1 19991215

AB The present invention provides a method and app. comprising a platform for a column-and-row-addressable high-d. biochip array. The app. can be used as a high-d. biochip array for electronic or **electrochem. detection** of **mol.** interactions between probe **mols.** bound to defined regions of the array and target mols. exposed to the array.

L27 ANSWER 5 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 5

ACCESSION NUMBER: 2001:435309 CAPLUS
DOCUMENT NUMBER: 135:43123
TITLE: Methods and compositions relating to **electrical** detection of nucleic acid hybridization or peptide binding preferably using AC impedance
INVENTOR(S): **Choong, Vi-en**; Gallagher, Sean; Gaskin, Mike; Li, Changming; **Maracas, George**; **Shi, Song**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 63 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001042508	A2	20010614	WO 2000-US33497	20001211

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-458501 A 19991209
US 1999-458533 A 19991209
US 1999-459685 A 19991213

AB This invention relates to the **elec. detection** of **mol.** interactions between biol. **mols.** The method generally rely on the mol. interactions such as nucleic acid hybridization or protein-protein (for example, antigen-antibody) binding reactions done on solid supports using arrays of peptides or oligonucleotides for capture binding ligands. As a result of these interactions, some electronic property of the system changes, and detection is achieved. In a preferred embodiment, the methods of the invention utilize AC impedance for the detection. In some embodiments, no **electrochem.** or other label moieties are used. In others, **electrochem.** active (ECA) labels are used to detect reactions on hydrogel arrays, including genotyping reactions such as the single base extension reaction.

L27 ANSWER 6 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 6
ACCESSION NUMBER: 2001:360271 CAPLUS
DOCUMENT NUMBER: 134:360812
TITLE: System and method for detecting molecules using an active pixel sensor
INVENTOR(S): **Choong, Vi-En**; **Maracas, George N.**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 53 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001035080	A1	20010517	WO 2000-US31031	20001110

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-440031 A1 19991112

AB In a mol. detection system and method, a sample contg. target mols. is added to an array of test sites, with each test site contg. distinct probe mols. The probe mols. bind with the target mols. in the sample to form bound complexes. A source illuminates the array of test sites with incident electromagnetic radiation, and an active pixel sensor detects the electromagnetic radiation from the array. To detect the presence of target mols. in the sample, the active pixel sensor detects changes in the optical properties of the test sites that result, either directly or indirectly, from their binding of the probe mols. with the target mols. The target mols. may also be characterized from which probe mols. bind to them.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 7 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 7
ACCESSION NUMBER: 2001:359878 CAPLUS
DOCUMENT NUMBER: 135:2509
TITLE: Freeze-dried macroporous polymer pads for biological assay supports
INVENTOR(S): **Choong, Vi-En; Shi, Song; Maracas, George**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 15 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001034292	A2	20010517	WO 2000-US42053	20001110
WO 2001034292	A3	20011220		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ,

PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-439889 A1 19991112

AB This invention relates to the improvement of arrays of porous polymer pads on solid supports used in biol. assays. The invention involves freeze drying the porous polymer pads to increase pore size. The increased pore size results in an enhanced ability of the porous polymer pads to bind specific binding substances such as DNA, RNA and polypeptides.

L27 ANSWER 8 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 8
ACCESSION NUMBER: 2001:145172 CAPLUS
DOCUMENT NUMBER: 134:200630
TITLE: Organic electroluminescent device with continuous organic electroluminescence medium
INVENTOR(S): **Choong, Vi-En; Shi, Song Q.;** Lee, Hsing-Chung
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: U.S., 10 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6194089	B1	20010227	US 1998-96088	19980611

OTHER SOURCE(S): MARPAT 134:200630

AB Org. media for use in electroluminescent display devices are described which consist of a single layer of a continuous org. medium AxByCz having a thickness defined by a first edge and an oppositely opposed spaced apart second edge (A = a component capable of transporting electrons; B = a component capable of transporting holes, C = a hole injecting material) where x ranges from a fraction of a percent at the first edge of the medium to 100% at the second edge of the medium, y has a value of a fraction of a percent at the second edge of the medium, and z has a value of a fraction of a percent at the second edge of the medium, and the content of the B component and the content of C in combination range to 100% at the first edge. Similar media AxByCz are also described in which x plus y plus z equal 100%, x has a value of a fraction of a percent at the first side of the org. electroluminescent layer, y has a value of a fraction of a percent at the second side of the org. electroluminescent layer, and z has a max. value at the first side of the org. electroluminescent layer. The hole injecting material C may be a porphyrinic compd. such as ZnPc, CuPc or MgPc. Electroluminescent devices are described which comprise a cathode in phys. contact with a second side of a single org. electroluminescent layer, and an anode, in phys. contact with a first side of the org. electroluminescent layer, the cathode, the org. electroluminescent layer and the anode, laminated in sequence, wherein the org. electroluminescent layer is the continuous org. medium AxByCz

defined above. The use of a continuous medium in which the concn. of the components may be varied allows the prodn. of devices without conventional heterojunctions formed from discrete layers.

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 9 OF 24 BIOSIS COPYRIGHT 2002 BIOLOGICAL ABSTRACTS INC.
ACCESSION NUMBER: 2001:524928 BIOSIS
DOCUMENT NUMBER: PREV200100524928
TITLE: Method and apparatus for obtaining electric field-enhanced bioconjugation.
AUTHOR(S): **Choong, Vi-En (1); Maracas, George ; Nagahara, Larry Akio**
CORPORATE SOURCE: (1) Chandler, AZ USA
ASSIGNEE: Motorola, Inc., Northbrook, IL, USA
PATENT INFORMATION: US 6238909 May 29, 2001
SOURCE: Official Gazette of the United States Patent and Trademark Office Patents, (May 29, 2001) Vol. 1246, No. 5, pp. No Pagination. e-file.
ISSN: 0098-1133.
DOCUMENT TYPE: Patent
LANGUAGE: English
AB Among other things, the invention provides devices and methods for obtaining electric field-enhanced bioconjugation events. In particular, the invention provides for contactless electrodes for obtaining the electric field, such that transport and bioconjugation of charged molecules is obtained in the absence of current flow through the buffer, sample, and/or porous media.

L27 ANSWER 10 OF 24 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 2001-398094 [42] WPIDS
DOC. NO. CPI: C2001-121073
TITLE: Dispenser for dispensing controlled amount of liquid onto a surface, comprises fluid reservoir comprising substrate, having holding and dipping wells interconnected with microfluidic channel.
DERWENT CLASS: B04 D16
INVENTOR(S): ALLEN, S E; **CHOONG, V; MARACAS, G N**; SHIRALAGI, K; TRESEK, J
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 94
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 2001043876	A1	20010621	(200142)*	EN	29
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW					
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW					
AU 2001027286	A	20010625	(200162)		

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 2001043876 A1		WO 2000-US34361	20001218
AU 2001027286 A		AU 2001-27286	20001218

FILING DETAILS:

PATENT NO	KIND	PATENT NO
AU 2001027286 A	Based on	WO 200143876

PRIORITY APPLN. INFO: US 1999-466314 19991217; US 1999-465959 19991217; US 1999-465960 19991217

AN 2001-398094 [42] WPIDS

AB WO 200143876 A UPAB: 20010726

NOVELTY - A dispenser (I) comprises a fluid reservoir (10) comprising a substrate, comprising a holding well (14) and dipping well (12) interconnected with microfluidic channel (16) to be in fluid communication.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for making a bioarray, by providing (I), in which the holding, dipping wells and microfluidic channels contain a fluid comprising a biological reagent, providing a stamp comprising a first substrate comprising several dispensing tips, contacting the dispensing tips into the dipping wells to load the tips with the biological reagent and contacting the tips with a sensor plate to form a bioarray.

USE - The device is useful for dispensing a controlled amount of liquid onto a surface to produce a biochip. The device is useful in the area of protein, RNA and DNA hybridization array formation.

DESCRIPTION OF DRAWING(S) - The figure shows the top view of the fluid reservoir.

Fluid reservoir 10

Dipping well 12

Holding well 14

Microfluidic channel 16

Dwg.1/26

L27 ANSWER 11 OF 24 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD

ACCESSION NUMBER: 2001-529009 [58] WPIDS

CROSS REFERENCE: 2000-410361 [31]

DOC. NO. CPI: C2001-157720

TITLE: Organic electroluminescent device for use in, e.g. pagers or cellular and portable telephones, comprises organic material, which is between cathode and anode electrodes and has region doped with alkaline metal compound.

DERWENT CLASS: L03 M13

INVENTOR(S): **CHOONG, V; SHI, S Q;** SO, F; XU, J

PATENT ASSIGNEE(S): (CHOO-I) CHOONG V; (SHIS-I) SHI S Q; (SOFF-I) SO F; (XUJJ-I) XU J

COUNTRY COUNT: 1

PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 2001009690 A1		20010726	(200158)*		6

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 2001009690 A1	Div ex	US 1997-986621	19971208
		US 2000-504650	20000214

FILING DETAILS:

PATENT NO	KIND	PATENT NO
US 2001009690 A1	Div ex	US 6064151

PRIORITY APPLN. INFO: US 1997-986621 19971208; US 2000-504650 20000214

AN 2001-529009 [58] WPIDS
CR 2000-410361 [31]
AB US2001009690 A UPAB: 20011010
NOVELTY - An organic electroluminescent device comprises anode electrode (22), cathode electrode (23), organic material between the electrodes, and alkaline metal compound (AMC) dopant in a region (25) of organic material adjacent the cathode electrode. The organic material is in juxtaposition with each electrode, and defines an electroluminescent region (24).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of fabricating an organic electroluminescent device comprising providing anode and cathode electrodes, positioning organic material between the electrodes in juxtaposition to each electrode, and doping a region of organic material adjacent the cathode electrode with AMC dopant.

USE - Useful as organic electroluminescent or light emitting devices for use in, e.g. pagers, cellular and portable telephones, two-way radios, and data banks.

ADVANTAGE - The inventive device has enhanced performance and higher efficiency, due to enhanced carrier injection and transport. It is stable and reliable. It excludes the use of reactive metals, thus simplifying the manufacturing process of the final device.

DESCRIPTION OF DRAWING(S) - The drawing shows an enlarged and simplified view in cross-section of the inventive organic light emitting device.

Anode electrode 22
Cathode electrode 23
Electroluminescent region 24
Region with dopant 25

Dwg.3/3

L27 ANSWER 12 OF 24 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2001:276613 CAPLUS
DOCUMENT NUMBER: 134:286036
TITLE: Molecular adsorption onto metallic quantum wires
AUTHOR(S): Bogozi, Albert; Lam, Osvaldo; He, Huixin; Li, Chunzeng; Tao, Nongjian J.; **Nagahara, Larry A.**; Amlani, Islamshah; Tsui, Raymond
CORPORATE SOURCE: Department of Physics, Florida International University, Miami, FL, 33199, USA
SOURCE: J. Am. Chem. Soc. (2001), 123(19), 4585-4590
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English
AB The adsorption of mercaptopropionic acid, 2,2'-bipyridine, and dopamine onto **electrochem.** fabricated Cu nanowires was studied. The nanowires are atomically thin with conductance quantized near integer multiples of 2e2/h. Upon mol. adsorption, the quantized conductance decreases to a fractional value, due to the scattering of the conduction electrons by the adsorbates. The decrease is as high as 50% for the thinnest nanowires whose conductance is at the lowest quantum step, and smaller for thicker nanowires with conductance at higher quantum steps. The adsorbate-induced conductance changes depend on the binding strengths of the mols. to the nanowires, which are in the order of mercaptopropionic acid, 2,2'-bipyridine, and dopamine, from strongest to weakest. The sensitive dependence of the quantized conductance on mol. adsorption may be used for **mol. detection.**
REFERENCE COUNT: 49 THERE ARE 49 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 13 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 9
ACCESSION NUMBER: 2000:900913 CAPLUS
DOCUMENT NUMBER: 134:53464
TITLE: Biosensors which utilize charge neutral conjugated polymer-coated electrodes
INVENTOR(S): Li, Changming; **Shi, Song; Choong, Vi-En; Maracas, George**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000077523	A1	20001221	WO 2000-US15832	20000609

W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 1999-138437 P 19990610
AB This invention encompasses charge neutral conjugated polymer or copolymers which have a functional group for binding a biomol. probe; electrodes and array of electrodes in **elec.** contact with such polymers and wherein a biomol. probe is covalently linked to the polymer. The invention includes biosensors which utilize the conjugated polymer coated electrodes wherein the binding to the **biomol.** probe is **detected** by **elec.** means such as AC impedance. Pyrrole and 3-acetate N-hydroxysuccinimidopyrrole were **electrochem.** copolymd. and

deposited on a platinum electrode. The copolymer was **elec**
. neutralized. The neutralized copolymer was reacted with
5'-amino-substituted oligonucleotide to make the biosensor.
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 14 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 10
ACCESSION NUMBER: 2000:790720 CAPLUS
DOCUMENT NUMBER: 133:330498
TITLE: Method and apparatus for obtaining electric field-enhanced bioconjugation
INVENTOR(S): **Choong, Vi-En; Maracas, George ; Nagahara, Larry Akio**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000067007	A2	20001109	WO 2000-US11998	20000503
WO 2000067007	A3	20010125		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6238909	B1	20010529	US 1999-305163	19990504

PRIORITY APPLN. INFO.: US 1999-305163 A1 19990504
AB Among other things, the invention provides devices and methods for obtaining elec. field-enhanced bioconjugation events. In particular, the invention provides for contactless electrodes for obtaining the elec. field, such that transport and bioconjugation of charged mols. is obtained in the absence of current flow through the buffer, sample, and/or porous media.

L27 ANSWER 15 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 11
ACCESSION NUMBER: 2000:321559 CAPLUS
DOCUMENT NUMBER: 132:340977
TITLE: Organic electroluminescent device with enhanced performance
INVENTOR(S): **Choong, Vi-en**; Xu, Ji-hai; So, Franky; **Shi, Song Q.**
PATENT ASSIGNEE(S): Motorola, Inc., USA
SOURCE: U.S., 5 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6064151	A	20000516	US 1997-986621	19971208

AB Org. electroluminescent devices are described which comprise anode and cathode electrodes; org. material positioned between the anode and cathode electrodes in juxtaposition to each of the electrodes, the org. material defining an electroluminescent region; and an alkali metal compd. or alkali metal alloy dopant in a region of the org. material adjacent the cathode electrode. Preferably, the dopant has a concn. in the range 0.1-15 wt.% in a region of the org. material having a thickness in a range of approx. 20-600 .ANG..

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 16 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 12
ACCESSION NUMBER: 2000:316166 CAPLUS
DOCUMENT NUMBER: 133:81482
TITLE: Large-area submicrometer contact printing using contact aligner
AUTHOR(S): Burgin, Timothy; **Choong, Vi-En**; **Maracas, George**
CORPORATE SOURCE: Physical Sciences Research Laboratory, Motorola, Tempe, AZ, 85284, USA
SOURCE: Langmuir (2000), 16(12), 5371-5375
CODEN: LANGD5; ISSN: 0743-7463
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Submicrometer patterns were produced in a thin layer of gold over a substrate 3 in. in diam. with an accuracy of .gtoreq.40 nm and a runout (feature to feature misalignment between the template and the stamped pattern) of approx. 1 .mu.m using a microcontact printing process. Successful pattern reprodn. required careful control of the forces exerted on the substrate during the microcontact printing process, as well as the encompassing pressure, which was achieved using a custom-built stamp aligner. The use of a thin-film stamp bonded to a rigid glass support in conjunction with the aligner significantly improved the runout and eliminated contact of recessed regions of the stamp with the substrate.

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 17 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 13
ACCESSION NUMBER: 2000:130165 CAPLUS
DOCUMENT NUMBER: 132:244457
TITLE: Bipolar transport organic light emitting diodes with enhanced reliability by LiF doping
AUTHOR(S): **Choong, Vi-En**; **Shi, Song**; Curless, Jay; So, Franky
CORPORATE SOURCE: Phoenix Corporate Research Laboratories, Motorola, Inc., Tempe, AZ, 85284, USA
SOURCE: Appl. Phys. Lett. (2000), 76(8), 958-960
CODEN: APPLAB; ISSN: 0003-6951
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal

LANGUAGE: English
AB An electrode contact scheme based on the use of an org. LiF alloy is investigated. The performance of org. light emitting diodes (OLED) with this contact scheme in both heterojunction and bipolar transport/emitting layer (BTEL) OLED structures are compared with their counterparts with LiF buffer layers. The org. LiF contact scheme improved device reliability of BTEL OLEDs by 32% to 92 500 h while adversely affecting device reliability of heterojunction OLEDs.
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 18 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 14
ACCESSION NUMBER: 2000:286458 CAPLUS
DOCUMENT NUMBER: 132:300412
TITLE: Efficient and durable organic alloys for electroluminescent displays
AUTHOR(S): **Choong, Vi-En**; Shen, Jun; Curless, Jay; **Shi, Song**; Yang, Jie; So, Franky
CORPORATE SOURCE: Phoenix Corporate Research Laboratories, Motorola Inc., Tempe, AZ, 85284, USA
SOURCE: J. Phys. D: Appl. Phys. (2000), 33(7), 760-763
CODEN: JPAPBE; ISSN: 0022-3727
PUBLISHER: Institute of Physics Publishing
DOCUMENT TYPE: Journal
LANGUAGE: English
AB New results are presented on a single-layer org. alloy LED. The device shows significant improvement in lifetime at room and elevated temps. The improvement is attributed to the elimination of the heterointerface and the minimization of the formation of unstable tris(8-hydroxyquinoline)aluminum (Alq3) cations. The efficiency is comparable to those of heterojunction counterparts. Balanced bipolar carrier injection and transport are made possible by adjusting the alloy compn. and doping.
REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 19 OF 24 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 2000:739330 CAPLUS
DOCUMENT NUMBER: 134:138592
TITLE: Physics of organic alloy light-emitting diodes
AUTHOR(S): Shen, Jun; **Choong, Vi-En**; Yang, Jie; **Shi, Song**; So, Franky
CORPORATE SOURCE: Department of Electrical Engineering and Center for Solid State Electronics Research, Arizona State University, Tempe, AZ, 85287, USA
SOURCE: Proc. SPIE-Int. Soc. Opt. Eng. (2000), 3939(Organic Photonic Materials and Devices II), 181-188
CODEN: PSISDG; ISSN: 0277-786X
PUBLISHER: SPIE-The International Society for Optical Engineering
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Theor. models and exptl. results on the carrier transport mechanisms in single-layer org. alloy light emitting diodes are presented. The

typical org. alloy consists of a mixt. of electron and hole transporting materials. The device shows significant improvement in lifetime at room and elevated temps. The improvement is attributed to the elimination of the heterointerface and the minimization of the formation of unstable tris-(8-hydroxyquinoline) aluminum (Alq3) cations. The efficiency is comparable to those of their heterojunction counterparts. Balanced bipolar carrier injection and transport are made possible by adjusting the alloy compn. and doping. The authors model the device by assigning individual conduction channels to each type of material. The sensitivity of the diode efficiency on several key parameters is studied.

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 20 OF 24 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1999-264041 [22] WPIDS
DOC. NO. CPI: C1999-077943
TITLE: Sensor for **electrically** sensing binding events for supported molecular receptors.
DERWENT CLASS: A89 B04 D16 J04
INVENTOR(S): JOHNSON, T; **MARACAS, G N**
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 84
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
WO 9918242	A1	19990415	(199922)*	EN	27
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW					
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG UZ VN YU ZW					
AU 9910727	A	19990427	(199936)		
EP 972085	A1	20000119	(200009)	EN	
R: AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC NL PT RO SE SI					
US 6048692	A	20000411	(200025)		
AU 717517	B	20000330	(200026)		
JP 2001507805 W		20010612	(200139)		22

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
WO 9918242	A1	WO 1998-US21251	19981006
AU 9910727	A	AU 1999-10727	19981006
EP 972085	A1	EP 1998-953322	19981006
		WO 1998-US21251	19981006
US 6048692	A	US 1997-946620	19971007
AU 717517	B	AU 1999-10727	19981006
JP 2001507805 W		WO 1998-US21251	19981006
		JP 1999-522388	19981006

FILING DETAILS:

PATENT NO	KIND		PATENT NO
AU 9910727	A	Based on	WO 9918242
EP 972085	A1	Based on	WO 9918242
AU 717517	B	Previous Publ.	AU 9910727
		Based on	WO 9918242
JP 2001507805	W	Based on	WO 9918242

PRIORITY APPLN. INFO: US 1997-946620 19971007
AN 1999-264041 [22] WPIDS
AB WO 9918242 A UPAB: 19990609
NOVELTY - The sensor has a gel (40) into which a reagent is diffusable. A molecular receptor (not shown) is supported in the gel. A first electrode (42) is embedded in the element.

DETAILED DESCRIPTION - In the illustrated embodiment, the gel (40), first electrode (42) and a second electrode (44) are supported by a substrate (52). The second electrode (44) is annular and is integrated with the surface of the substrate. The first electrode is a rod in the gel lying transverse to, and coaxially within, the second electrode. A meter (not shown) is **electrically** connected between the two electrodes. This **electrically detects** a binding event between a **molecule** and the molecular receptor. The meter may be a capacitance or inductance meter to measure a change in impedance between the electrodes resulting from the binding event. Alternatively, it may detect a charge or a resonance shift resulting from the binding event. As an alternative to the gel, the receptor-supporting element may be an acrylamide, polypyrrole or polysaccharide.

USE - For **electrically** sensing a molecular binding event. The molecular receptor may include a DNA or RNA probe to detect a corresponding, complementary DNA or RNA base sequence.

ADVANTAGE - Hybridization events are detected without labelling with radioactive or fluorescent markers.

DESCRIPTION OF DRAWING(S) - The figure shows a side sectional view of one embodiment of the sensor.

gel 40
first electrode 42
second electrode 44
substrate 52
Dwg.3/14

L27 ANSWER 21 OF 24 WPIDS COPYRIGHT 2002 DERWENT INFORMATION LTD
ACCESSION NUMBER: 1999-526288 [44] WPIDS
DOC. NO. NON-CPI: N1999-389684
TITLE: Substrate supporting structure of micro-contact printing apparatus for microelectronic devices, sensors, etc.
DERWENT CLASS: P74 U11
INVENTOR(S): BURGIN, T P; **CHOONG, V**; MANCE, T M; **MARACAS, G N**
PATENT ASSIGNEE(S): (MOTI) MOTOROLA INC
COUNTRY COUNT: 1
PATENT INFORMATION:

PATENT NO	KIND	DATE	WEEK	LA	PG
US 5947027	A	19990907	(199944)*		9

APPLICATION DETAILS:

PATENT NO	KIND	APPLICATION	DATE
US 5947027	A	US 1998-149011	19980908

PRIORITY APPLN. INFO: US 1998-149011 19980908
AN 1999-526288 [44] WPIDS
AB US 5947027 A UPAB: 19991026
NOVELTY - An inflatable membrane (112) moves substrate (124) towards micro-contact printing stamp (100). An extracted pin (114) is used for disengaging surface (125) of substrate, from stamping surface of printing stamp, so that printed pattern is not distorted. Multiple mechanical stoppers (111) are attached to the inflatable membrane.

DETAILED DESCRIPTION - The stoppers are provided for mutually spacing stamping surface and substrate surface in parallel so that contact portion of stamping surface, contact substrate surface. The mechanical stoppers also responds to pressure variation of major surface (109) of printing stamp arranged in pressure chamber (122). An INDEPENDENT CLAIM is also included for micro-contact printing method.

USE - In micro-contact printing apparatus for micro- electronic devices, sensors, optical elements, etc.

ADVANTAGE - The mechanical stoppers facilitate uniform distribution of pressure across stamping surface. The extraction pin detaches substrate from printing stamp, so that pattern distortion is reduced.

DESCRIPTION OF DRAWING(S) - The figure shows cross-section of micro-contact printing apparatus.

Printing stamp 100
Major surface 109
Mechanical stopper 111
Inflatable membrane 112
Pin 114
Chamber 122
Substrates 124
Surface 125
Dwg.3/5

L27 ANSWER 22 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 15
ACCESSION NUMBER: 1999:418071 CAPLUS
DOCUMENT NUMBER: 131:163088
TITLE: Organic light-emitting diodes with a bipolar transport layer
AUTHOR(S): **Choong, Vi-En; Shi, Song;** Curless, Jay; Shieh, Chan-Long; Lee, H.-C.; So, Franky; Shen, Jun; Yang, Jie
CORPORATE SOURCE: Phoenix Corporate Research Laboratories, Motorola, Inc., Tempe, AZ, 85284, USA
SOURCE: Appl. Phys. Lett. (1999), 75(2), 172-174
CODEN: APPLAB; ISSN: 0003-6951
PUBLISHER: American Institute of Physics
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A structure based on a bipolar transport/emitting layer (comprising a mixt. of hole- and electron-transporting materials) is described

which was used for making org. light-emitting diodes. Compared to the conventional heterojunction org. light-emitting diodes, more than a factor of six improvement in device reliability (a projected operating lifetime of 70,000 h) was achieved in the structure. The improvement in device lifetime is attributed to the elimination of the heterointerface present in the conventional devices which greatly affects the device reliability.

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 23 OF 24 CAPLUS COPYRIGHT 2002 ACS DUPLICATE 16
ACCESSION NUMBER: 1999:807888 CAPLUS
DOCUMENT NUMBER: 132:100161
TITLE: Reliability comparison of BTEL and bilayer organic LEDs
AUTHOR(S): Curless, J.; Rogers, S.; Kim, M.; Lent, M.; **Shi, S.; Choong, V.-E.;** Briscoe, C.; So, F.
CORPORATE SOURCE: Physical Sciences Research Laboratories, Motorola Labs, Motorola, Tempe, AZ, 85284, USA
SOURCE: Synth. Met. (1999), 107(1), 53-56
CODEN: SYMEDZ; ISSN: 0379-6779
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Org. structures consisting of 2 distinct layers (bilayer), a hole transport layer and an electron transport/emitter layer are compared to structures using a bipolar transport and emitting layer (BTEL). Reverse bias and different duty cycle did not significantly affect reliability. The BTEL structure had significantly improved reliability compared to the bilayer structure. The relative change in device voltage is linearly proportional to the relative change in luminance and the const. of proportionality was a function of the contact. This const. of proportionality can be used as a figure of merit for voltage increase during operation. The BTEL structure also gives improved reliability at elevated temp.
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L27 ANSWER 24 OF 24 CAPLUS COPYRIGHT 2002 ACS
ACCESSION NUMBER: 1991:525543 CAPLUS
DOCUMENT NUMBER: 115:125543
TITLE: Molecular structure of a cobalt(I) complex lacking a carbonyl ligand. A unique example of cobalt-nitrogen bond shortening
AUTHOR(S): **Shi, Shu;** Daniels, Lee M.; Espenson, James H.
CORPORATE SOURCE: Dep. Chem., Iowa State Univ., Ames, IA, 50011, USA
SOURCE: Inorg. Chem. (1991), 30(18), 3407-10
CODEN: INOCAJ; ISSN: 0020-1669
DOCUMENT TYPE: Journal
LANGUAGE: English
AB I.MeCN was prepd. **electrochem.** and its crystal and **mol.** structures **detd.** by x-ray diffraction. The distances between Co(I) and the N of the macrocycle are unusually

short (1.839 .ANG.), even shorter than the corresponding bond (1.878 .ANG.) in the Co(II) analog. The Co atom is displaced 0.257 .ANG. above the axial plane toward pyridine. Reasons for this unusual Co-N bond shortening are discussed along with the electronic structure of the d8Co(I) anion. The complex is a model for vitamin B12. Crystal data: space group P.hivin.1, a 12.492(4), b 12.883(3), c 8.996(3), .alpha. 99.39(2), .beta. 109.25(2), c 103.72(2), Z = 2.

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